LUSAKA & 4 ADDITIONAL ZERO-WASTE POWER PROJECTS IN ZAMBIA*

Zambia Project Brief for the Ministry of Green Economy & Environment

New Waste plants for Leopards Hill, Monse, Livingston and Lake Tanganyika Harbour

USD $350 Million

Full funding provision - No Government money required - UK AID assistance

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Assistance given by PSECC Ltd in the UK
(www.psecc.co.uk & www.pseccsolarfarms.com)

Zambia Waste project website www.wtezambia.com

Alset Power Company, Inc
245 E 93rd St, 9th Floor, New York NY http://www.alsetpower.com/

One 500 tonnes per day Waste Management plant for Lusaka & four other plants for Zambia

Executive Summary

This executive summary presents an overview of four Zero-Waste municipal solid waste (MSW) gasification power projects (the Projects) in the country of Zambia. The purpose of this report is to present the details, arrangement, and benefits of the Projects to Leopards Hill, Monse, Livingston and Lake Tanganyika Harbour, request after review that the utility company, ZESCO, express interest in engaging with the Projects as the Project electricity buyer, and thereby commit to considering executing a power purchase agreement (PPA) with the Project Investors, Alset Power and the nation of Zambia, in their relationship as a PPP (Public/Private Partnership), that will govern the disbursement of investor funds to execute the projects.

This Report provides a summary of the defining drivers of the project and the project response to challenges faced in the industry, specifically meeting aggressive renewable and air quality targets set by the Lusaka City Council and incentivized by the Federal Government of Zambia, and improving waste management in the local communities. This will be achieved by installing new gasification equipment to produce syngas from MSW sufficient to generate 16 MW of electrical energy for each of the Zero-Waste Power Plants. As the nation of Zambia currently has no public or private waste management companies or practices in place, it is necessary for Alset Power Company, in conjunction with the nation of Zambia to formulate good waste management practices throughout the country in order to alleviate the problems associated with zero waste management.

The intent of the Report is to set the stage for promulgating the benefits to the technology and approach underlying the Projects, namely the benefits of building these large-scale biomass/MSW power plants to fully run on MSW-based fuel, as well as the economics to motivate interest in the Projects on the part of ZESCO and the nation of Zambia. The major benefits to Zambia will be to eradicate the problems associated with the current MSW (municipal solid waste) crisis and secondly to provide a minimum of 75 MW of baseload energy to the power grid of Zambia. **If ZESCO cannot be used for a PPA then Mining companies will be appraoched.**

The main objective of this report is to earn the confidence of the Lusaka City Council and the nation of Zambia in general in the Projects such that the utility will express in a letter of interest or in an email to the Project Investor its willingness to consider the full project details and investment arrangement based on the information contained within this Report. Following the Lusaka City Council's expression of interest, the Project Investor will complete its financial analysis and provide the detailed terms and paperwork for final consideration by the utility. We are working closely with the Ministry of Green Economy and Environment and OPPPl.

The details of the Projects and terms of the investment favor the utility by creating an environmentally conscious way to generate electricity from a renewable energy source. Utilizing the proposed MSW gasification technology facilitates many direct and indirect improvements to air and water quality in the region by diverting waste from landfills.

Green Growth Compact agreement between the UK and Zambia
UK and Zambia sign landmark Green Growth Compact to drive billions in sustainable investment, create jobs and strengthen economic partnership. (November 2021) - COP 26 Funding could be applied for from FP080 / FP099 & FP168 funding platforms for Zambia but first we will approach our Private Banks. Also 500MW of Solar Farms for Lusaka.

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Circular Economy

Projects to Leoperds Hill, Monse, Livingston and Lake Tanganyika Harbour

500 tonnes per day Waste Management plant at Leopards Hill Road and fifty trucks. Four plants in total for Zambia and another 150 trucks. One main plant for Lusaka is being built by another company.

500 skips . **4**0 skip trucks . 10 x 20 ton tippers . **4** from end loaders . **3** excavators . **3**0 hook loaders . 600 containers . The above skips etc is for Lusaka Leopards Hill **Road** site only.

Alset Power

The Company

Background

***Name of the Company*:**	Alset Power, Inc (the "Company")
***The legal form of Company*:**	Corporation
***Organized in*:**	Florida
***Date Organized*:**	April 11, 2014
***Headquarters Location*:**	245 E 93rd St, 9th Floor, New York NY 10128
***Business*:**	Electric Services (NAICS 4911)[1]
Operations:	Electric Power Generation, Waste, and Water Services

The Company Mission and Values

The Company is committed to the harmonious development of innovative technologies that provide efficient, effective, and enduring social, economic, technological, and environmental outcomes. The Company focuses on the well-being of people, the economic development of the local communities, the protection of the natural environment, and the broad social responsibilities of the Company and its key contributors. The Company will ensure that policies and programs are integrated into an overall business model that focuses on achieving sustainable energy performance and outstanding business results.

As the demand for innovative energy solutions expands, the Company is committed to implementing innovative solutions in the power generation market. The Company has developed a patented gasification system to produce and utilize syngas from MSW. The system allows MSW to be fully processed without presorting such that no material goes to a landfill. All material is either converted to syngas, recycled in ferrous and non-ferrous metal channels, or sold to companies in the concrete industry. The goal is to develop and implement industry-leading solutions that optimize performance without compromising environment, health and safety aspects. Strategic leaders believe that driving real value and positive outcomes are achieved by integrating all aspects of the system from the design-build phase to operations and maintenance.

Working Principles

- Build the foundation of the Company on high-value clean electric power generation.
- Rely on innovative solutions in all aspects of the development process, including business modeling, community engagement, demand response, systems integration, and critical technology solutions.
- Be transparent and open with leading approaches to complex fundamental systems. Clearly define the challenge, the response, its benefits and limitations, and immediate and future impacts on the natural and constructed environments, and on the communities that live within them.
- Embed the driving principles of the Company into the organizational and cultural fabric of the work by establishing, populating, and institutionalizing the mechanics of problem solving driven by Innovation, Compassion, Diversity, and Contribution.

[1] North American Industry Classification System, http://www.census.gov/eos/www/naics/.

Markets

The Company focuses on the Electric Power Generation market in various roles depending on the project, including project owner, developer, generator operator, and generator owner. The wide range of roles that the Company has held in power generation projects has provided a depth of experience at all stages of projects.

Related markets that any one project may embrace include waste management, concrete production, ferrous and non-ferrous metal recycling, and community development.

These markets are integrated in terms of interconnected resources, solutions, regulations, and systems. These markets form a critical infrastructure system.

The Energy Markets

The energy sector is one of the largest and most complex parts of the global economy. Long-term solutions have to be framed in the context of fuel availability and customer needs, the environmental and social concerns, the economic impacts of volatile fuel prices, the associated influences on economic instability, and the development of new technologies.

The area of biggest growth in this market is in renewable electric power generation as a solution to meeting federal and state renewables targets as a percentage of the total electric power generating resource mix. Ambitious goals set by policymakers have accelerated actions by independent power producers and utilities to reduce harmful emissions while maintaining or increasing capacity and output.

The determination of what technologies qualify as renewable is largely in the hands of policymakers at the state and federal levels. Biomass resources, based on wood, agricultural, or municipal wastes, historically has been considered a renewable resource. In some countries, facilities that convert municipal solid waste to a clean-burning gaseous fuel (MSW Conversion) are eligible for certification in the Renewables Portfolio Standard (RPS).

Assisted by federal and state energy efficiency programs, electric power users in the US have significantly reduced their usage since 2007. But demand remains high as many industries are converting to electrical equipment (electric vehicles and water heaters for instance). The need for a complete transition of the national electric power generating system from fossil fuels to cleaner technology and resources will continue to expand the electric power generation, distribution and transmission technology sectors for many years to come.

On Thursday in London, the UK and Zambia signed a new landmark partnership to drive sustainable economic growth and build on the momentum created by the historic COP26 climate summit. The Compact was signed in London by the UK Minister for Africa, Vicky Ford and Zambian Minister of Foreign Affairs, Stanley K Kakubo.

The Compact sets targets for delivering billions of pounds of new investment, doubling trade volumes between the two countries, and channelling over £100m of new financial resources to small and medium sized enterprises. It will strengthen coordination between the entire UK business community and the Zambian Government, as well as opening up financing opportunities for Zambian businesses. It provides the framework for collaboration with UK institutions that are researching and innovating in renewable energy, urban planning, trade connectivity and more.

https://www.gov.uk/government/news/green-growth-compact-agreement-between-the-uk-and-zambia

The Management Team

President and Chief Executive Officer (CEO), Avery Knox, MBA, with responsibilities to maintain the steady and consistent focus on the core principles of the enterprise: with overall responsibility to enable, lead, promulgate and grow the capacity, capabilities, competence, and relevance of the enterprise and the revenue streams it delivers to investors, the markets, and the people who forge them. Primary location will be New York City. .

Avery is a former member of American Stock Exchange. Stockbroker and bond trader with Morgan Stanley. Former real estate sales agent with Douglas Elliman Co. in New York, NY. Former owner and operator of a pet supply business. Entered the field of Business Brokerage in 2003. Worked with several firms and then branched out on his own as a sole proprietor of Diversified Business Brokers. He received Bachelor's degrees in Economics and Art History from Yale University in 1979. He later earned an MBA in Finance from New York University's Stern Business School in 1985.

Senior Vice President, Steve Racoosin, with responsibilities of overall construction management and operations related to deliver, operate within, and augment sustainable outcomes to increase profitability, positive change in the communities we serve, and the influence we yield in the laboratories, on the markets and on public policy. Primary location will be in California.

A high-tech visionary, Mr. Racoosin brings over 49 years' experience in energy development projects, landfill operations, material recovery facilities, transfer stations, and alternative waste solutions. His design of the "Alternative Energy Center" or "TRF" "Total Recovery facility" which is ALL WASTE streams under one roof, cleanly processed into electricity, fuels and useful building products is setting the full-service standard that communities are looking for.

Mr. Racoosin previously served as CEO of BioGold Fuels Corporation in the United States. Mr. Racoosin was the Founder and CEO/President of Full Circle Industries, Inc. which is today BioGold Fuels. In 2002 Mr. Racoosin founded and became CEO of World Waste of America, Inc., which later became World Waste Technologies, Inc., a publicly traded waste-processing company.

Mr. Racoosin's past research efforts include pressurized steam classification technologies for MSW in addition to bio-mass to liquid fuels and pyrolysis/gasification, has researched algae and has been involved with the transesterification of organic oil from crops to high grade diesel fuels and he has studied hydrogen and fuel cell technologies. He has spent his career studying creative re-uses for ALL forms of waste into energy and fuels. In 1992 he studied at the University of Alabama at the Johnson Environmental Energy Research Center at the Von Braun Rocket Center in Huntsville, Alabama on the science of Steam Sterilization of MSW. In 1984 as a landfill manager with R. E. Wolfe enterprises and San Bernardino County he was in charge of the construction and management of the landfill and was also involved in the first privatization of the San Bernardino County landfill at Ontario, CA and in 2005 was involved with his company World Waste Technologies in the building of the Republic Services Material Recovery Facility in

Anaheim, CA today, one of the largest MRFs in the world processing over 6,000 tons of MSW per day. Mr. Racoosin invented the Bio Carbon Fuels dryer and is the patent owner before assigning the patent to Bio Carbon Fuels. He spent 18 years developing the system to take ALL FORMS of waste and blend them into re-engineered carbon for production of liquid fuels and clean electricity.

VP Business Development, Alan Brewer, MSc, with responsibilities to organize, develop, and deliver portfolio projects to market and grow the enterprise. He establishes the initial client relationships and structures the project to provide maximum value. Primary location will be the United Kingdom.**Active in Climate Change since 1995**

Alan has experience of working with a wide range of Governments since 2017 at both Ministerial & local level and with UNEP and REPP together with identification of Adaption Renewable Energy & Waste projects for climate change program in Kenya, Ghana, and the USA. In 2012 he formed International Consortium with World Expert Companies. He has effective delivery abilities and world-class consulting experience and capacity building as indicated by his work over twenty-five years for UK Government Climate Change Mitigation programs and Hampshire County Council together with City Council Energy Policy & Strategy. He is a qualified Environmental Engineer, Manager with Project Management experience over eighteen years together with being a Strategic Thinker & Renewables Developer & Waste Management Plants.

VP of Research & Development, Mark Turner, with responsibilities over the current and future technology developments, will lead the research team to successfully implement systems and develop improvements to processes and components. Primary location will be Florida.

Mark M. Turner, American Inventor and founder of Green Group Alliance Members, is the CEO of Global Energy Group P744 Worldwide Inc. and managing member of his other corporation GEG Consulting & Developing International, LLC. Mark's Ideas are multifaceted in the fields of electromagnetics and chemical formulations. His problem-solving abilities have been used extensively with members in this group and with other close inventor friends of his. He is known by his friends as "The Professor" taught by the School of thought and imagination. Mr. Turner, whose degree is in refrigeration mechanical engineering, owned and operated a very successful refrigeration business for many years. He has been an independent research scientist for over 25 years. After a sever industrial accident in the mid 1990's, he turned his interests to research and development of electromagnetic field generators. Mark has been working on DC motors and how they relate to becoming power production systems through various old technologies that employ AC to DC through setups like alternators and electronics, and magnetic pulse direct/drivers to develop ADV voltage, and ADC current where both systems work together through DC motors or without the use of any motors to create a Load Compensating Electrical Fuel Cell being powered by AC sources without inverters. Mark has worked on the development of magnetic coil energy generators to free up all power needs to eliminate fossil fuel usage, and most recently has been developing the load compensating electrical fuel cell.

This fuel cell has the capacity to reduce and/or completely eliminate the need for outside electrical power systems from power plants.

Executive VP of EPC, Tim Formaz, with responsibilities as a Board member and EPC leader, Tim will provide oversight to construction scope definition and contracting. Primary location will be Ohio.

Timothy (Tim) Formaz, is a graduate mechanical engineer with over forty-five years of power generation experience. Tim has deep experience in EPC design/build for combined cycle gas turbine plants, bio-mass plants, CHP plants, waste-to-energy projects, utility boilers and a broad range of engineering consulting services. Projects are worldwide to include the Middle East, Europe, Africa, and Ireland. He specializes in difficult fuels and unusual applications. Past projects include converting low BTU coal fired boiler to fire MSW and the conversion of 25 MW coal fired stoker boiler to fire woodchips.

Prior to founding Turbine Power in 2006, Tim was President/Principal of HRSG International, Inc. in Seville, Ohio performing EPC, consulting, and design services for power generation systems in the Pacific Rim countries and continental US. Setting up joint ventures in Taiwan, Thailand, Vietnam, Malaysia, and India for boiler and heat recovery equipment design and manufacturing, custom finned tubing and finned tube products, specialty heat exchangers using internally developed software and design programs.

Earlier Tim was President of Waste Heat Technologies, Inc. (Waste Heat) The company located in Wadsworth Ohio performed the design and manufacture of Heat Recovery Steam Generation units (HRSG's), Fin-Fan units, Economizers, Air Heaters, Super Heaters, and specialized heat exchangers. Waste Heat was a full ASME Code boiler shop with 120 hourly employees and 35 people on staff. The company manufactured a full line of boiler products; HRSG's up to 200,000 PPH and tubular air heaters. The company also specialized in heat exchangers for military applications, diesel exhaust gas boilers, air cooled heat exchangers, and custom finned tubing. The company entered into technology transfers agreements in China, Korea, and Taiwan for the entire product line and design software.

Director of Brazilian Operations, Luiz Salomon, with responsibilities to source and develop energy projects in Brazil. Luiz was recently requested to become the Energy Minister of Brazil by President Jair Messias Bolsonaro. However, Luiz turned down the position. He is currently negotiating a project in Brazil to provide 1,000 MW of power plants in which Alset Power Company is involved.

Luiz is a Senior Executive Director and electrical engineer, with a solid and strong background in telecommunications and energy sector, including power generation and transmission lines. He has 30 years of vast experience with projects and construction in the civil, mechanical and electrical engineering fields.

In the past couple of years, he has been developing M&A prospects with over R$ 6 billion in potential projects.

Director of South American Operations, Juan Walker Prieto, with responsibilities to source and develop energy projects in Chile and Argentina. He was the first person to build a wind farm in Chile. He has just completed a large solar PV farm project with J.P. Morgan.

Juan is an experienced executive in the energy sector, with over 20 years representing major project developers and equipment manufacturers in South America. He has represented Vestas, Iberdrola, and now Alset Power, while also forming multiple project companies for wind and solar projects that were later sold to investors. He is also the founder of ACERA, a Chilean Renewable Energy Association. Juan holds a Bachelor's degree in Economics with a minor in Business from Boston University in 1986.

This leadership team, which is already hands-on in daily execution of Enterprise-related efforts to-date, will come together as decision-makers to guide the Company's strategy and business plan, and to manage the enterprise according to specific areas of expertise crucial to creating optimal, appropriate, and sustainable revenue streams positioned by the collective portfolios this group identifies, develops, and delivers to the markets we serve. All partners are tasked with governing, growing, and setting new standards in business development, implementation, and profitability, while lowering risk exposure across all activities. Each Partner contributes a specific skillset that underlies their primary role, and each member brings a unique and valued perspective to the leadership from a broad and deep practical experience beyond their named expertise in science, economics, policy and the law; what we consider to be the primary drivers of change relative to the activities of the Company.

The primary focus of this leadership team will be supporting requirements of the Project. Management will be supported by the following individuals, some of which will be part-time roles, providing robust hands-on information and quality control management:

1. Compliance and Permit Director
2. Controller (CPA)
3. Operations Coordinator
4. Project Development Coordinator
5. Public Relationship Director

The Company is lean by design to meet current objectives. All individuals will perform a multiplicity of tasks to ensure established milestones are met on time and within managed resources, which encourages structured cost containment and risk reduction while supporting anticipated agility necessary to respond to near term and long-term challenges. Office personnel stand at five and plant personnel is currently at twenty-six. Alset Power Company principals have a combined experience in the municipal solid waste and power plant industries of more than one-hundred (100+) years. We have no experience specifically in the country of Zambia, but experience in similar projects in other parts of the world. Current annual revenues are in the range of $21.3

Million.

The management team will also be supported by the following individuals executing the work in the field:

1. Chief Engineer (PE Certified)
2. Senior Project Manager (Engineer)
3. Deputy Project Manager I (Engineer)
4. Site Services Director (Engineer)
5. Chief Architect

Positions and Roles

Project Monitoring and Control Group

Compliance and Permit Director

Directs permitting and licensing activities to enable the Project to satisfy local, state and federal land use, industry, and public safety requirements. Prepares documentation and submittals, and represents the Company in pubic permit and licensing proceedings. Provides legal and cost analysis on required Project filings and filing fees. Advises the Project management on new or pending regulatory requirements that may impact project components.

Controller

Directs financial affairs of the organization. Prepares financial analysis of operations for guidance of management. Prepares reports that outline company's financial position in areas of income, expenses, and earnings, based on past, present and future operations. Directs preparation of budgets and financial forecasts. Arranges for audits of company's accounts.

Operations Coordinator

Coordinates and enables the complex project planning, development, and operational mechanics outlining current and future initiatives. Acts as the single point of contact on all phases of project operations related to resourcing, logistics, procurements, scheduling, delivery, monitoring and testing, documenting and promulgating project details and results. Works closely with Senior Management to maintain clear and continuous information flow between field, control, and senior leadership. Develops, implements, and maintains relevance of project communications flows to assure timely, productive, and accurate work.

Project Development Coordinator

The Project Development Coordinator is the control point of project level Operations and Policy Development teams, with responsibility of assuring complete and accurate applications and outcomes by: creating, implementing and maintaining a detailed project log noting work and specifications required, met, approved, and otherwise acted on in support of the deliverable; engaging with senior project team personnel to maintain communication lines between the project team and project partners, suppliers, and the public; and working with the Public Relationship Director to craft and deliver relevant and informative public messaging, and to represent the Company on the public arena.

Public Relationship Director

Directs staffing, training, knowledge and performance evaluations to develop and enhance community relationships. Manages market goals and advises partners and policy makers concerning development goals and

standards. Analyzes market and industry statistics to formulate programs in promoting engagement with existing projects and in developing new understanding of local or regional needs. Manages public-related activities. Represents the Company in the public sphere.

Project Implementation Group

Chief Engineer (PE Certified)

Oversees the facilities and operations. Responsible for the technology, engineering, and mechanics of project installations, testing and monitoring during commercialization, and ongoing operations and maintenance oversight and control systems. Directs project personnel on all aspects of engineering, development and operations, including scheduled shut-downs and trouble-shooting operations in case of a performance or operational drag on the system. The final decision-maker in the field in all operational component issues impacting the delivery of services, responsible for maintaining the promise of the Company to deliver on the guaranteed continuous high-quality electric power capacity under an ongoing service contract.

Senior Project Manager (Engineer)

Develops and maintains the mission and charter of the Project. Oversees business aspects, technology development, production, finance, support service, etc. Approves all financial obligations. Seeks business opportunities and strategic alliances with other companies and organizations. Plans, develops, and establishes policies and objectives of the project organization in accordance with Company directives and charter. Directs and coordinates financial programs to provide funding for new or continuing operations in order to maximize return on investments, and increase productivity.

Deputy Project Manager I (Engineer)

Directs raw materials sourcing and procurement, and management, field service, repair, and shipping/receiving functions for the plant. Assists the Project Manager and Chief Engineer in maintaining the integrity of the project construction and delivery.

Site Services Director (Engineer)

Designs and Engineers site services including water, wastewater, building electricity, sewage treatment, telephone and internet services, and assists with project interconnections and interconnection services. Works closely with Project Leadership and the project team to assure appropriate systems integration and timely coming online of critical services. Provides oversight to plant services operations post-commercialization under an ongoing service contract.

Chief Architect

Directs site appropriate architectural and site-specific design program activities with the specific intent to integrate project components within the existing environment. From a systems perspective, the Chief Architect will work closely with the Chief Engineer, Site Services Director, and Building Science Specialist to review and modify structures, access points, and public spaces as needed to enhance the productivity of the plant, and the accessibility and desirability of the plant architecture from the community perspective.

Project Overview

Big Picture

Power generation is one of the largest contributors to greenhouse gas emissions. As the effects of climate change

have become more concerning, authorities at all levels of government have moved to reduce pollution, specifically from power generation. The challenge is to transition to cleaner technologies without sacrificing capacity, as demand for electricity remains high and continues to grow.

At the same time, resource utilization has become more important as municipalities are stretched to their limits. Tipping fees for landfills in densely populated areas such as California have steadily increased, indicating that landfill demand is growing faster than supply. New methods of managing MSW are needed to address this trend and protect the air and water supplies from harmful contaminants.

The projects discussed herein (the Projects) will provide positive benefits to both issues mentioned above: emissions from power generation and management of MSW. Alset Power's Waste-to-energy technology produces electricity from MSW while capturing 95% of harmful emissions, substantially reducing dioxins and furans. These plants can serve as major processing centers of MSW, alleviating some of the pressure on landfills. Municipalities and counties depend on an ability to dispose of wastes to maintain sanitation, safety, and environmental stewardship. The key principles of a sustainable enterprise and system include:

- Using technologies that are close to the feasible maximums in terms of efficiency.
- Having systems and processes that produce outcomes with the highest level of quality, efficiency, reliability, safety, longevity, durability, maintainability, serviceability, and disposability.
- Ensuring that safety and human health are primary considerations during designing and operating facilities, plants, and processes.
- Ensuring that the impacts of the technologies, processes, and operations do not adversely affect the quality of life in the local and regional communities or the natural environment.
- Communicating with stakeholders to provide the full factual information about the processes and outcomes.
- Applying resources in a manner that minimizes the potential for environmental degradation, depletion, disruption, and destruction.
- Using resources in the most effective and efficient means possible given their availability and costs, the processes, and best practices.
- Using non-toxic and safe materials and ensuring that all processes are environmentally friendly.

The Project Companies

Partial Construction Project Management Reference List
Gas Turbine & Combined Cycle Plants

- Aalborg Industries, Inc., Erie, PA
  - Install 4 Heat Recovery Steam Generators
- Gemma Power Systems, Monroe, GA
  - Installation of Westinghouse, 501-F Gas Turbine
- PG&E National Energy Group, Bowling Green, OH
  - 50 MW Power Plant – Peaking Facility, 2 – GE Frame 5
- PG&E National Energy Group, Napoleon, OH

    - 50 MW Power Plant – Peaking Facility, 2 – GE Frame 5
- City of New Smyrna Beach, New Smyrna Beach, FL
    - 50 MW Power Plant – Peaking Facility, 2 – Frame 5
- City of Calhoun, Calhoun, GA
    - 22 MW Power Plant – Peaking Facility, 1 – LM 2500
- Papeles Venezolanos, Venezuela
    - 30 MW Combined Cycle Power Plant, 1 – GE Frame 5
- SW Energy/Sweeny, Old Ocean, TX
    - 335 MW Cogeneration Plant, 3 – 501D5A
- CSW Energy/ARK Energy, Bartow, FL
    - 103 MW Combined Cycle Cogeneration Plant, 2 – LM 6000 w / 25 MW STG
- Saranac Energy Company, Inc., Plattsburg, NY
    - 240 MW Combined Cycle Cogeneration Plant, 2 – 7EA w / ACC
- Vineland Cogeneration, Vineland, NJ
    - 46 W Combined Cycle Cogeneration Plant, 1 – LM 6000 w / 12 MW STG
- E84104, Eastern Illinois University, Charleston, IL
    - Fuel: Coal fired chain grate boiler
- E86070 Union Carbide Corp., Charleston, WV
    - Fuel: coal fired chain grate boiler #4
- E86138 Kent State University, Kent, OH
    - Fuel: Coal fired chain grate B&W boiler
- E86152 Innovest IBAE, Kuala Lumpur, Malaysia
    - Fuel: Heavy oil (3-6% S) oil fired IBAE boiler
- E87032 Montgomery County Incinerator Plant, Dayton, OH
    - Fuel: Trash incinerator chain grate CE boiler
- E94115 Taroko Textile Corp Ltd., Taipei, Taiwan
    - Fuel: Heavy oil (6% S) fired Chin boiler
- E94124 Taroko Textile Corp Ltd, Taipei, Taiwan
    - Fuel: Heavy oil (6% S) fired Chin boiler
- E94122 Long Chen Paper Co Ltd, Chang Hua Hsien, Taiwan
    - Fuel: Heavy oil (6% S) fired Chin boiler
- E9714 Ajinomoto Vietnam Co Ltd, Dong Nai Province Vietnam
    - Fuel: Heavy oil (6% S) fired (4) Danstoker boilers
- E20038 Nestle Foods (M) Sdn Bhd , Shah Alam, Malaysia
    - Fuel: Heavy oil (6% S)
- Installation of Westinghouse
    - 501-F Gas Turbine

- E84104, Eastern Illinois University, Charleston, IL
    - Fuel: Coal fired chain grate boiler

Turbine Power System:

Turbine Power Inc. is a design/build firm engaged in power generation, power systems, and construction worldwide. Located in the heart of the mid-west industrial belt, in Ohio, Turbine Power Inc. is a highly flexible provider of engineering solutions, and equipment as well as construction and project management services.

Our experience around the world covers 33 years, with projects in over 20 countries, providing us with a unique knowledge and adaptability to the various conditions that may arise with any given environment.

Our engineering and technical staff have decades of hands on experience in the engineering and construction phases of power generation. This includes equipment selection, overhauling, site design, shipping, installation, and startup of generating plants and transmission systems.

Our Capabilities:

Engineering: mechanical, civil, electrical

- detailed design
- FEED (front end engineering and design)
- consulting
- installation & project management

Analysis

- fit-for purpose analysis
- feasibility studies
- financial analysis

Inspections

- power plant inspections
- power line inspections & surveys
- substation inspections

Dismantling, Relocation, Upgrading

- control systems
- full power plants
- critical equipment repair
- modifications

Power plant supply

- NEW power plant supply
- USED power plant supply & fully overhauled power plant supply

Power Generation:

- Simple Cycle 5 MW to 300 MW
- Combined Cycle
- Turbines new & used (gas and steam)
- Reciprocating Engines
- Biomass Plants
- Coal Plants
- Sugar Mills
- Pulp & Paper
- Biogas
- Solar
- Remote Power Installation

Installation &Commissioning:

- Gas Turbine power: ABB, Rolls-Royce, GE, Siemens, Solar
- Steam Turbine power: GE, Siemens, Skoda, and others
- Reciprocatng engine power: Rolls-Royce Bergen, Wartsila, Jenbacher, Niigata, Caterpillar, and others

HV Transmission:

- Design&Installation
- New 33kV to 765kV
- Conductor Replacement
- Powerline maintenance
- Substation maintenance

Building Large Electrical Power Plants

Conventional Approach:

The design and construction of large electrical power plants worldwide is an enormous and expensive business. These extremely necessary projects are in many cases the first steps taken in building a major development in a remote area (mining venture, military base etc.) or in a developing and/or rapidly growing country. More and more, for convenience and environmental considerations, these power plants have and are being designed around natural gas as the fuel of choice. Huge, technically sophisticated companies like General Electric, Siemens etc. have filled this role by designing more and more gas turbine generators for

both “peaking” power needs and continuous base load generating capacity. These power plants are built at strategic locations or along an electrical grid for final power distribution.

These gas turbines are basically massive jet engines mounted in a “frame” i.e. GE Frame 9, GE Frame 7 etc. and turned on their side. The shaft extending from the turbine blades turns a gear box and the large connected electrical generator. The generator can be either 50 Hz or 60 Hz depending on the country’s electrical system. The units are now outfitted with extremely efficient control systems that burn natural gas and other petroleum products very efficiently. As a practical matter these plants/turbines are dual fueled and can and do burn diesel fuel and/or light crude oil as well. It should be noted that the use of diesel fuel instead of natural gas will normally increase the fuel consumption by approximately 5% for new or remanufactured units.

In addition, it is common practice in most modern large plant designs to make these plants even more efficient by capturing the waste heat in the exhaust gases. The waste heat emanating from these gas turbines is converted to steam in huge; “heat-recovery and steam- generation” (HRSG) units. This earlier waste heat, now converted to steam is routed to a nearby steam turbine(s), which allows the production of up to 50 percent more electricity from the same fuel than a traditional “simple-cycle” plant. This process is referred to as “combined cycle” (CC) electrical generation and from an engineering and environmental perspective is extremely efficient. These units are normally designated with the short hand of GTCC meaning “gas turbine in combined cycle”. When the turbines are not paired with the HRSG and steam turbine units they are referred to as being in “single-cycle or “simple-cycle”.

These projects come with a cost. These power plants, by necessity are quite large 100 to 1,000-plus Megawatts (MW) and cost new approximately $1.0 to $1.4 million per MW installed, depending on location and size. In addition they can take 3 to 5 years to build even after all the design and engineering is completed and the hundreds of millions of dollars in financing are in place. The feasibility, design, engineering and financing alone can take two to four years. The longest lead time in the construction process is the manufacture of the gas turbines, which with the major manufacturers, is approximately 24 to 36 months. Normally 100% new equipment is required throughout. Ironically the same banks that are reluctant or refuse to finance remanufactured power plants, participate in financing the purchase of electrical power companies that own and operate 100% used equipment.

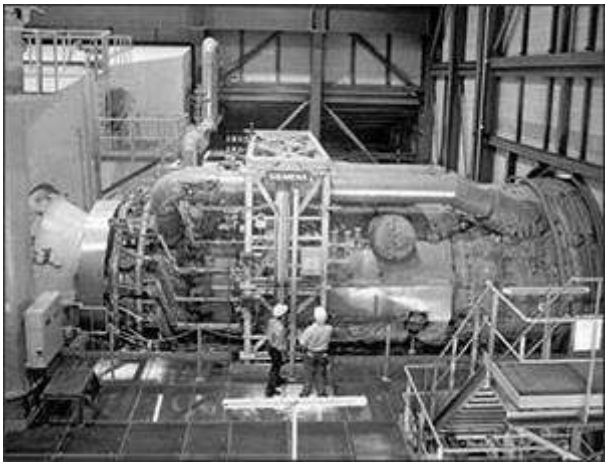
The consulting, design, engineering, purchasing, reviews, permitting, financing and construction issues are no less formidable. These projects, because of their tremendous scale and cost come under enormous scrutiny by owners, government agencies, credit enhancing agencies, lenders etc. Normally only a “select group” of the largest “name brand” consultants, engineers and manufacturers operate in this arena. The

larger the project, the smaller will be the group of available participants. The extreme lead times on these projects require massive amounts of overhead just to examine plans, travel to remote locations, design equipment and prepare the cost estimates for projects in sometimes faraway places several years in advance. In addition, because of the money involved and project scrutiny, the financial, bonding and legal "requirements" just to be involved eliminates most companies. Unfortunately and maybe unintentionally, everyone in this "professional food chain" gets paid more money by taking longer and making the project more expensive. Regardless, the end result is that major electrical projects; take a very long time to build and are built by a select group of extremely large companies at enormously high prices.

Alternative Approach:

Many knowledgeable customers know that buying and building power plants with partially remanufactured equipment can save enormous amounts of money without additional construction or performance risk. One of the secrets of the power generation business is that the basic equipment is very hardy and can last a very long time i.e. 40 to 50 plus years. These extremely expensive and long lead time components i.e. turbines, turbine blades, shafts, housings, gear boxes, generators etc. last lifetimes when properly maintained. In addition used AND brand new equipment must be torn apart, inspected and partially rebuilt approximately every four to six years. During the rebuild periods, bearings and seals and blades are replaced; all components are inspected visually and via ultrasonic testing (UT) for thickness along with dye penetrant (DP) testing for cracks and flaws. Normally the latest efficiency control hardware and software is also installed during these rebuilds. From an environmental perspective, remanufactured units can meet or exceed the emissions requirements for World Bank Standards.

Cost/Economics:



Now the economics are totally different for used equipment. Used equipment, even slightly used equipment, is discounted severely. This is not that it is not extremely serviceable and valuable, but because the specific equipment may not be available for a particular time frame and the "remanufactured equipment" will very rarely be approved by all those, consultants, bureaucrats, engineers, lawyers and the many lenders. Some organizations prohibit the purchase of used and remanufactured equipment.

In addition much of this equipment has already been "paid for" by someone else and for a myriad of reasons is being dumped on the market. Major mining operations close down when commodity prices fall, military bases are closed for political reasons or merchant power plants go broke when fuel prices move unexpectedly in the wrong direction. When this happens, which is often enough, power plants/units enter the market at huge savings. The first problem is finding knowledgeable purchasers willing to look at these alternatives. In addition these purchasers must be matched with smart, honest and knowledgeable contractors to acquire this equipment, have it rebuilt/remanufactured and then match all the appropriate components and build a total package on the customer's site. (At times complete plants can be purchased, remanufactured and relocated in their entirety). Both issues must be addressed, but the single most important consideration in this process is that these knowledgeable customers must have their own or

alternative financing and be able to move with relative alacrity.

It should be noted that most rebuilt/remanufactured equipment in this area comes with a "zero hour warranty" (one year or 8,000 hours of operation) just like brand new equipment. Project savings, of 35% to 40% plus, are not unusual. Remanufactured equipment/plants sometimes come with large inventories of spare parts, complete plant designs and knowledgeable personnel. In addition the project quality may very likely be equal to or better than newly-built plants. Many times, used stainless components like tanks are used as substitutions for mild steel because they are available. Other components may generally be "oversized" because the larger size(s) were available and maybe at lower cost. All new electrical wiring and control cabling will be used throughout. Many other items like on site housing and or extra-large foundations may be added to overcome unforeseen site or labor problems. (It is often infinitely easier to use common sense and over-build to solve a problem than spend days, weeks or months fighting with design engineers etc. over change orders/cost items). Because the contractor is working directly with the owner, he wants to quickly build a great product and earn his trust. In addition, because of the huge savings achieved in buying the major components, and the reduced consulting, engineering and finance costs; putting the money onto the construction/project is easy and monetarily rewarding for all parties. Projects can be completed and online in about one third the time needed for all "new" facilities. These earlier start-up dates can also garner hundreds of millions of dollars per year in owner revenues.

As with all projects, the construction specifications will be more or less standard and controlled by international construction and electrical codes. Draw schedules, site inspections and payments can and will all be agreed to before a project is initiated.

Reliability Issues:

Regarding reliability issues of "rebuilt/remanufactured" equipment vs "new" equipment, it is important to remember that remanufactured equipment delivered from qualified rebuild shops carry a "zero hour warranty" which is identical to a warranty on a brand new piece of equipment. These rebuild shops are owned and operated by companies like GE, Siemens etc. These warranties normally cover the first year of operation i.e. 12 months or 8000 operational hours, parts and service.

In addition there are many well qualified international companies that will enter into operations and maintenance service contracts to operate the equipment and keep qualified personnel on site at all times. This provides a second level of protection and these O&M contracts are relatively low cost in the great scheme of things.

Insurance can also be purchased for lost revenues, bad fuel, bad water quality, catastrophic failures etc. Like all insurance this is just a cost benefit peace of mind item, but available for both new and remanufactured plants.

End Product:

Rebuilt plants have a few drawbacks. As mentioned earlier, the basic main hardware (turbines, generators etc. can last 40 to 50 plus years) so a remanufactured plant in theory will have a slightly lower life span say 30 -40 years vs 45-50 years for a new plant. In addition older plants/turbines may be slightly less efficient. As a frame of reference the latest and greatest gas turbines in combined cycle have a burn rate of approximately 6500 BTU per KWH. Older equipment will most likely be slightly less efficient, even after a rebuild and control upgrades; say 6700 to 7000 BTU per KWH. (This is still a very efficient burn rate).

Turbine Power Systems is the Manager of an extremely capable group of independent disparate power contractors with diverse skill sets. These core companies and partners have and do work together worldwide building and relocating electrical power plants. Under the direction of Turbine Power Systems these individual companies will be brought in as needed to work with a large cadre of indigenous contractors and personnel. A partial list of these companies is as follows:

- Turbine Power, Inc., USA
  Allenborough Energy Corp, Kansas, USA
- Global Marine and Power LLC, Louisiana, USA
  Power Consult Group, USA

These extremely capable independent disparate groups have and do work together worldwide building electrical power plants. Depending on the project, individual companies will take the lead as the overall Manager of the project. The individual companies will be brought in as needed to work with a large cadre of indigenous contractors and personnel. Turbine Power Inc. is normally the Manager on this team.

Operations and Maintenance (O&M) is normally handled by Turbine Power in ventures with world renowned companies that specialize in O&M. Companies like The Power Consult Group are one of the normal choices. O&M includes all the normal day to day supervision of an operating plant and the periodic service requirements like changing filters etc. In addition, O&M includes the periodic total rebuilds that occur every 4 to 6 years. In the great scheme of things O&M is a very small cost item, but extremely important.

Competencies

The Project Companies will utilize a single management team for all of the projects, one that has the technical, financial, customer relationship and managerial skills and knowledge to position the Companies successfully in the business and the related operations. The management teams combine the following attributes:

- A comprehensive knowledge of the process equipment and technology and a thorough understanding of the markets and regulatory mandates.
- The expertise to establish the operations and the relationships with the most appropriate suppliers and partners.
- A thorough knowledge of the environmental laws and regulations and the knowledge to obtain the necessary permits.

Based on its knowledge and capabilities, the Project Companies are well positioned to work with state officials and the local communities in a variety of activities. These include selecting the most appropriate suppliers to implement the technological solutions, assessing the social and environmental impacts, working with public officials to obtain the necessary permits, working with the financial investors, selecting and developing the location, starting the plant, and developing markets.

Strategic Intent

The underlying approach focuses on producing electrical energy from MSW in a process that produces zero waste. Economics and environmental considerations play significant roles in the selection and decision-making processes. The technological solution discussed herein involves processing MSW streams from local communities based on long-term agreements, and recovering the energy stored within them cleanly and efficiently. The related project represents a commitment to creating a brighter energy future. Investments in future technologies that reshape the energy landscape necessitate insights and imagination to develop sustainable solutions that eliminate many of the problems of the existing technologies.

The strategic, technological, and operational aspects from an external perspective include exploiting new opportunities to divert MSW away from landfills, reducing pollution, and mitigating the challenges in assuring the availability of electricity to residents and business in the region. The strategic, technological, and operational aspects from an internal perspective include leveraging capabilities and resources, utilizing the most cost-effective sources of fuel, creating an innovative power generating system to fill the voids, embracing strategic partners, and creating sustainable enterprise.

Arrangement and Ownership

The Project will be financed under a special arrangement utilizing U.S. Exim Bank as the guarantor for the funding of the five Zero-Waste Power Plants. By combining two banks in this endeavor to fund all of the Zero-Waste Power Plants we are buying time to acquire replacement financing from other available sources including Power Africa and World Bank. Keep in mind the fact that the loan repayment does not begin until the Zero-Waste Power Plants are fully built and operational. The term of the loan will be one year after which time the loan will be replaced with a new loan unless the existing loan can be renegotiated with the lending bank/s.

Key Participants

Keeping in mind that this is a PPP or Public/Private Partnership:

Government of Zambia

Alset Power Company, Inc. or an African subsidiary of Alset Power Company, Inc.

EPC Contractor: Siemens or a subsidiary of Siemens Power

O&M: Siemens or a subsidiary of Siemens Power

Banks: J.P. Morgan/Standard Charter

Project Participants Chart

Investor Arrangement

Market Considerations

The Fundamental Challenges

During the past decade, numerous federal and state laws and regulations pertaining to energy issues across the U.S. and other nations have been enacted and promulgated in responses to social, economic, and political pressures to reduce greenhouse gas emissions. Several states have provided incentives or regulations to reduce emissions from many sectors like power generation, agriculture, and transportation.

Generating electricity using MSW is an opportunity to improve management of waste and produce clean energy. Advanced gasification technology offers many far-reaching opportunities for solving the social, political, economic, and management concerns related to recycling operations, waste management, power generation, and air quality. The patented gasification technology of Alset Power is cleaner than alternatives such as woody biomass, landfill dumping, and direct burning of waste. Power generation is usually defined in terms of fuel sources and costs, technological systems, process conversion efficiencies, environmental impacts, government mandates, and the connections to the electrical grid among numerous other technical and economic aspects.

Making proactive investments in new zero-waste gasification technology will support SCE's efforts to reduce emissions while keeping capacity online, providing a viable option that can be replicated at other plants around the country.

From a societal and business perspective, cost, quality, availability, and reliability of electricity are essential aspects in a stable (sustainable) system. Users want to be ensured that the supply of electricity at a given price will be stable over time. An integrated system with proven technology and a reliable cost structure provides stability and consistency with solid long-term benefits. Supply stability offers businesses, in particular, the confidence to invest into new developments and/or expansions of existing businesses.

An integrated approach considers all of the main factors required for successful power generation and combines the essential technologies and resources at a single facility. The core concept is the vertical integration of the processes into a holistic system, i.e. complete system.

Waste Disposal Needs

Closure of highly polluting power sources combined with higher costs to dispose of municipal waste creates a

strong incentive to implement zero-waste gasification technology that can address both challenges simultaneously.

In the period 2012-2019, the amount of waste disposed in Zambia each year has increased more than 50%. Building additional landfill capacity is not only very expensive, it does not eliminate the waste; instead, it just stores the waste and eventually causes ground water contamination. Organic matter that breaks down in landfills releases methane and other harmful gases, some of which is captured and some is released directly to the atmosphere. The most proven way to avoid such emissions is to process the waste with gasification technology, combust the resulting gas, and clean the exhaust from the combustion.

Siting

New Plant Layouts

The zero-waste gasification technology utilizes equipment that can be installed either on the existing landfill sites or any strategically located site near Lusaka or another major municipality. Each plant has ample capacity to receive truck shipments of waste. The storage areas for the waste will be enclosed and arranged to be able to clearly separate and distinguish MSW from biomass that may need to be composed, to avoid confusion. The building layouts are sufficient to house the different process equipment. The storage building is designed to be negative air pressure so as to contain all odors significant to MSW. To the extent possible, the project team will minimize modifications to the existing layout, except in cases where combined-cycle would become part of the overall project.

The zoning and transportation leading to the plants should be sufficient for operation using the new zero-waste technology, and no modifications or upgrades to the roads are anticipated, pending an evaluation for transport of the largest components that will arrive on site during construction.

The operating characteristics of the new gasification system are similar to traditional systems in terms of noise, and there are no anticipated negative impacts to the local way of life. The new system will introduce a lower amount of pollution to the atmosphere, producing a measurable improvement in the local air quality.

The process of public engagement is a considered, managed and inclusive process that motivates understanding and engenders mutually increasing benefits to all parties. There is no more directly applicable area of engagement with the public than the siting of the facility. The successful project offers the solution with the least disruption of a local environment and the maximum return on what disruption must be endured. This project is designed to satisfy these criteria, and as such increases the relevance of the solution to the community and to the political process.

100% Re-use of ALL forms of waste. ALSET POWER looks at the re-use of ALL waste as Carbon. All waste is Carbon based, and we harvest Carbon from the residual leftover non-recyclable waste streams and convert that Carbon into building products and energy with zero waste leftover.

NO LANDFILL.

This project is not incineration. **This project requires**

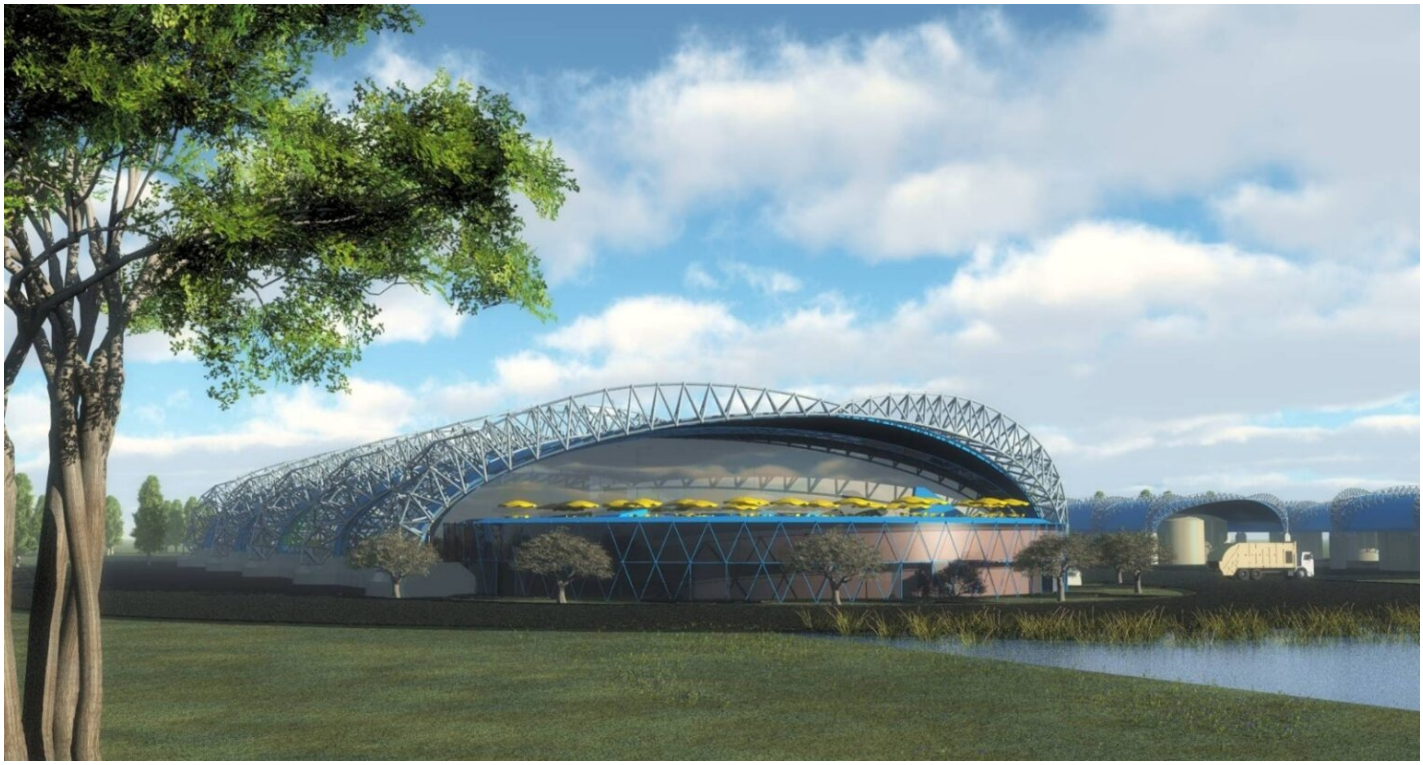
This project and its technology are covered by a warranty and insurance guarantee to cover any equipment breakdown or replacement and will also cover any lost revenue to ensure the timely loan payments for the project financing.

PROJECT INFORMATION

for

Zambia Environmental Education Center & "TRF®" a Total Recovery Facility®

Zambia Environmental Education Center



Summary

Introduction

ALSET POWERs partner, Siemens, along with Bio Carbon Fuels offers this proposal to construct the Zambia Environmental Education Center with a Total Recovery Facility® ("TRF®") inside, which will produce building products and renewable electricity and liquid fuels in the second and third phases of this project.

This project information package is intended to provide Zambia with information regarding a proposed Environmental Education Center that will convert MSW and other waste streams into composite building products and clean electricity and renewable on-road transportation fuels (the "Project"). The system proposed will initially consume up to 2,500 tons of MSW currently available in the Zambia area. This will eliminate the current practice of landfill saving millions of dollars over current practices. The Project will be scalable to take advantage of future growth opportunities expandable to all the MSW in the including agricultural waste and

other various waste streams giving Zambia 100% reuse and complete recycling with no need for any waste to go to a landfill and reaching the county's goal of carbon neutral by 2025.

The Project preserves all of Zambia's current infrastructure and base of employment. All current employees will be transitioned into a better working environment and better wages along with being trained for the "state of the art" technologies for the conversion of waste into greenhouse gas saving products and energies. They will be proud of their new jobs and the new knowledge they have gained which will ensure their job security into the future. They will be "Environmental Technicians" doing their part in cleaning up the land, mitigating climate change and reducing global warming effects.

The Project, as detailed below, will have a major impact on the Country beyond its positive financial contributions.

The Project and Process

The first stage of the Project will produce renewable clean electricity. After this first phase is up and operating then the local demand for Ultra Low Sulfur Diesel, ULSD (in a process that does not involve combustion and produces almost zero toxic or hazardous emissions to the air, ground, or water) from the MSW will be explored. A traditional material recovery facility (or MRF) is recycling center that sorts and separates incoming MSW into metals, glass, clean cardboard and paper and hard plastics for recycling and disposes of or sometimes composts the organic waste. The recyclables are almost impossible to sell that is why we look at them as carbon and energy. Zambia must realize that there is not any economic ability to ship the recyclables to another country like in the old days. Today, Zambia must get set up to completely re-use ALL types of waste into beneficial energy while ensuring its independence from importing fossil fuel based liquid transportation fuels and ensuring a clean supply of energy no matter what the import costs or supply are and guaranteeing the people, they will have power during storms and blackouts when the wind and solar is not operating. We have created a Total Recovery Facility (or TRF®) that can process and recycle nearly 100% of any kind of incoming waste.

• Our front-end employs sorting and separating equipment, but we can also process all the organic waste and the dirty paper, cardboard, and all waste plastics that a Material Recovery Facility ignores. Pizza boxes, dirty diapers, rotten food, and even the small amount of infectious home care medical waste that ends up in the waste stream. • We then take this sorted and separated waste and dry it, sterilize it, shred 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 rotary kiln units 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 sent into to generators for electricity or liquefied and refined into on-road transportation fuels, such as renewable ultra-low Carbon diesel (see sample on right).	

The second phase of the Project will allow the facility to produce green renewable hydrogen from the organic materials (without producing greenhouse gas as a by-product). Once the facility is established it will be able to

increase future output up to 2-3 times by adding modules to use MSW and agricultural waste as additional feedstock.

Fresh food will be grown from the capturing of Co2 which would have been released into the atmosphere and is pumped into growing pods in a "farmer's market" like setting. This method of hydroponics involves zero chemicals and has 30 times higher production than outdoor grown. These growing indoor pods can produce up to 8,000 heads of lettuce every 14 days and many other types of fruits and vegetables. Zero Waste/ Zero Emission. The Farmers Market will be staffed locally by the people to tend the co-op farmers market creating more jobs.
The site can process materials on a 24x7 basis with all critical infrastructure housed in a visually appealing "green" building. Siemens', our engineering partner, will design, build, operate and maintain the facility. Siemens is a top global engineering, procurement, and construction ("EPC") company with $10 billion in annual revenues and 57,000 employees worldwide.

The Proposal

In this proposed privately developed Project, Zambia would assume **no financial liability** for the design, engineering, construction, or operation of the facility. The county would be obligated to a Feedstock Agreement.

The proposed facility will provide Zambia the ability to recapture significant costs being experienced for processing waste materials being transported to the landfill across the island and allow these funds to be used for the benefit of the community. The net result of this proposed facility is an Environmental Education Center and a Total Recovery Facility® that produces renewable energy while significantly reducing the carbon footprint, reducing dependence on landfills, consuming other potentially harmful waste materials while generating significant long-term revenue streams. This facility will be iconic in its presence and service to the public. They will be proud of it and what it can achieve in cleaning up the local environment and mitigating greenhouse gas production.

With the installation of the proposed facility Zambia would be the most environmentally green facility in addressing MSW management throughout the country. Zambia will never again have to worry about where their waste will go. The facility never fills up like a landfill and it never closes due to bad weather. This project will not have any burning in the process and therefore no ash to be landfilled like the typical waste incineration technologies.

ALL feedstocks are useable in ALSET POWER's production of green electricity or liquid fuels, or hydrogen include the following:

Municipal Solid Waste (MSW): Wood, Food, Tires
Agricultural Solid Waste: Animal waste, Crop Waste, Other Organic Wastes
Forestry Industry Waste: Slash Piles, Twigs, Branches, Leaves, Wood Chips, Sawdust, Stumps
Biomass: Grass, Algae, Sawdust, Woodchips, Corn, Cellulose, sewage sludge
Food Industry Waste: Food Processing, Meat Processing, Food Service Wastes (Fryer Oils, Potato Peels)

The Technological Solution

Definitions

Clean energy technologies are advanced state-of-the-art technologies designed, developed, and deployed to

maximize the positive benefits and minimize the negative defects, burdens, and impacts. They focus on eliminating, abating and/or mitigating pollution, waste streams, degradation, and depletion better than alternates. Clean energy technologies include the art, science, and engineering, as well as the devices, methods, and know-how that can be applied in a beneficial manner.

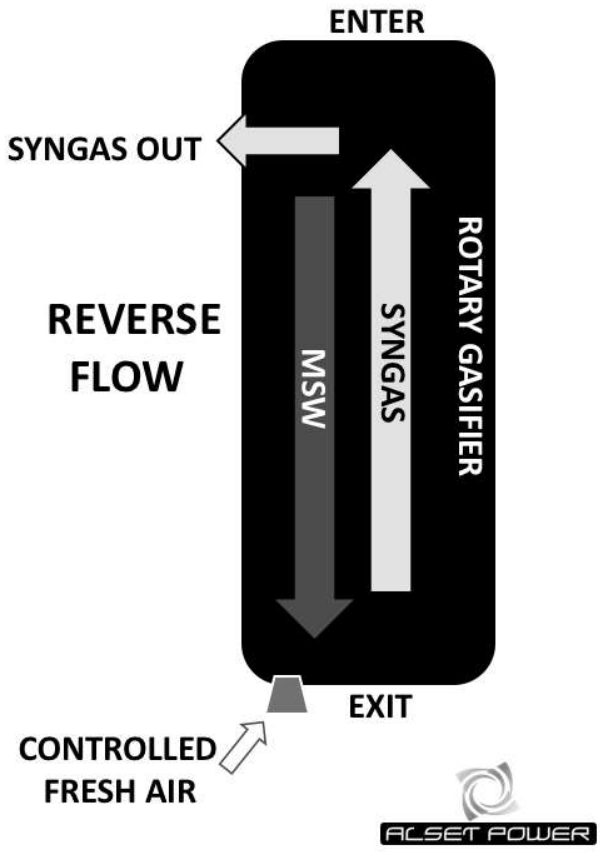
Sustainable energy technologies focus on creating and using energy resources with essentially zero defects, burdens, and impacts. They involve designing, producing, and delivering energy solutions to customers and stakeholders that are in harmony with the social world and natural environment. A sustainable energy technology implies that all actions are sustainable using resources and energy that are replaced at levels that are balanced with those being used. It also means that wastes and negative effects and impacts are fully mitigated in sync with those being generated and there is no net increase.

Gasification processes are methods to separate organic material from inorganics, and convert the organic material into a usable syngas fuel. They expel recyclable material such as metals and plastics, and convert all the organic material into syngas. The MSW is introduced to a rotary chamber, where controlled amounts of heat and fresh air converts the organics into syngas while leaving inorganics whole. The inorganics are expelled for recycling, while the syngas is collected through an outlet for use as fuel in a boiler.

Alset Power Rotary Gasifier

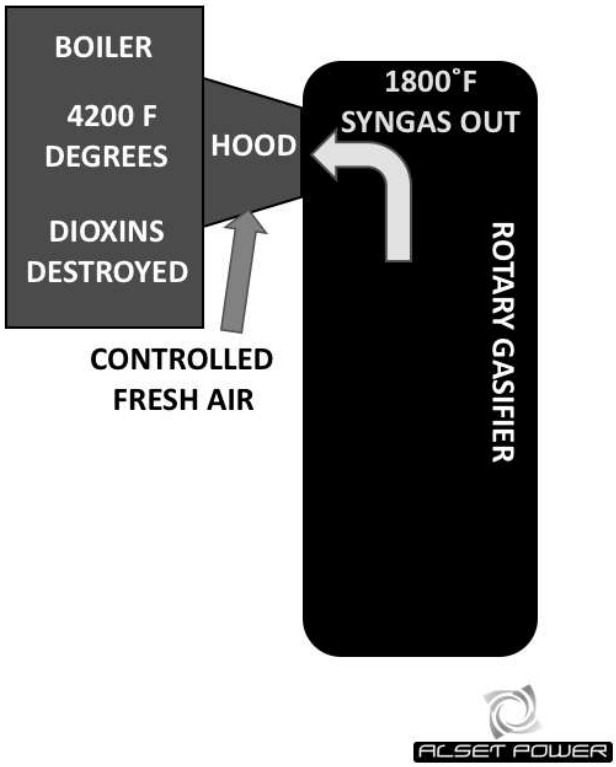
Description

Alset Power has developed and patented a proprietary system of producing syngas from MSW with a rotary gasifier. The gasification chamber is a long, 10 ft diameter cylindrical chamber that is arranged on a slight incline



and a slow rotational speed. MSW is fed into the rotary chamber through a hopper and a ram, creating a low-oxygen environment. The MSW is heated/dried at 400°F to prepare for gasification. In a second zone of the chamber, the organic material undergoes gasification into syngas at 850°F, while the inorganic material remains whole. The third and final zone of the chamber introduces a controlled amount of fresh air to cool the syngas and create a reverse flow pattern to extract the syngas on the side of the inlet. The syngas helps heat the incoming MSW before being extracted through the hood.

After the syngas passes through the hood, it is ignited before entering the boiler. The gas burns at around 4200°F,



a temperature that destroys 95% of the toxins including dioxins and furans in the syngas. The nearly complete combustion provides energy for the boiler and steam circuit. After combustion, the remaining flue gas passes through a mist scrubber, where it is sprayed with a mixture of activated carbon and lime slurry to remove acidic gases and heavy metals. The slurry also cools the flue gas before transport to the bag house. Rapid cooling below 300°F prevents formation of dioxins in the gas.

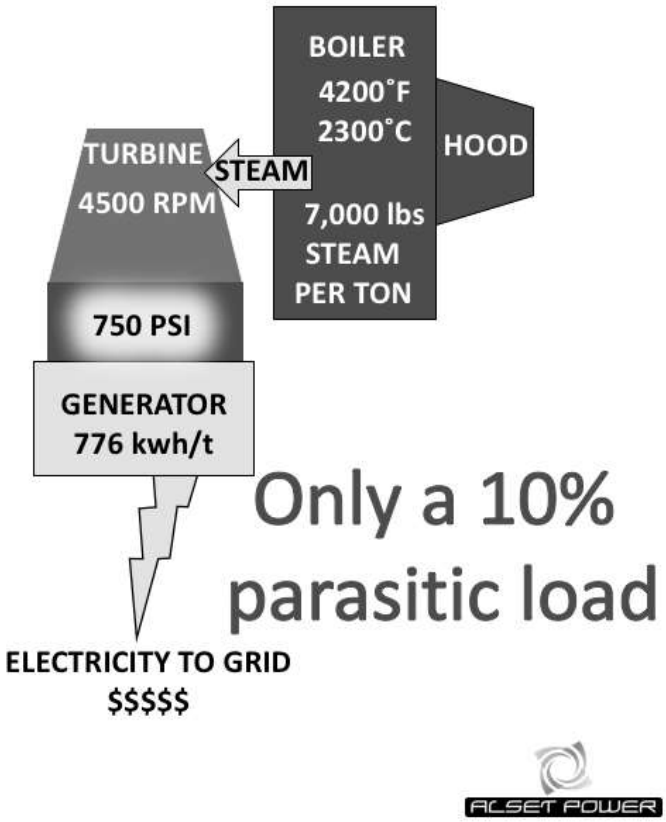
The bag house filters remaining particulates from the flue gas. Intermittent shaking of the filters collects these particulates in the form of fly ash. The fly ash is collected in "socks" and deposited in a bin for recycling. This material will be mixed with frit and used in asphalt production.

Finally, the clean and cooled exhaust gas travels through a stack where it is released to the atmosphere. A continual emissions monitoring system ensures that the composition of the exhaust gas meets all EPA standards.

Power Generation from Syngas

The combustion of syngas in the boiler creates steam at a rate of 7,000 lbs of steam per ton of MSW. The steam reaches 750° F at 750 psi, and the steam circuit powers a turbine, which powers an electrical generator. This steam circuit is similar to traditional steam-based power generation. Similarly, the transformers and electrical

switchgear that are necessary for grid connection are identical to other steam-based power plants.



Benefits

The proprietary rotary gasification process to convert MSW to fuel is a modern, environmentally friendly way to manage waste streams while providing stable power generation.

Plants utilizing this process serve as a major off-taker of MSW, avoiding costly efforts to build new landfills that contain toxic substances and threaten groundwater contamination and pollution. Alset Power's state-of-the-art waste-to-energy gasification system has the ability to divert high volumes of waste away from landfills and recover previously undesired resources from the waste material. The exhaust created from combustion of recovered syngas is thoroughly treated in a way that meets all EPA and CARB requirements, resulting in a clean exhaust released to the atmosphere and fly ash that can be sold to asphalt producers. This 100% recycling methodology is at the heart of the technology, as it promotes responsible utilization of resources.

Waste management is becoming an increasingly urgent problem for many municipalities across the country.

The plant will have six types of revenue:

- Electricity sales through a PPA with ZESCO (Zambia Electricity Supply Corporation)
- Tipping fees collected from the to-be-formed Zambia Waste Management Company (ZWMC) in proportion to the tonnage of MSW that is brought to each of the plants.
- Recycled metal sales of the pieces of ferrous and non-ferrous metallic material that is separated from the MSW with magnets during gasification.

- Fly ash sales of the ash that is collected in filters to concrete producers.
- Concrete made from the combination of residue ash, crushed glass and other components.
- Fresh vegetables produced in the greenhouses and sold into the local market.

Siemens

The multinational corporation Siemens, or a relevant subsidiary, will lead EPC efforts during the conversion project. Siemens has deep construction experience for all types of power generation facilities, including this type of rotary gasification equipment. Alset Power has collaborated with Siemens on similar projects in the past, and the two companies have a strong relationship based on complementary knowledge and skills.

A long-term contract is under development for Siemens to serve as the O&M contractor for all plants after the construction is complete. Many of the employees at the plants will hired from Zambian nationals. Management will be either brought into the country or professionals will be sourced locally as they have valuable knowledge about the operation and maintenance of key pieces of equipment such as the turbine and generator.

MSW Gasification Advantages

The main advantages of the gasification technology are that it diverts material away from landfills, and produces zero waste in its conversion to fuel.

MSW from surrounding communities can be used in the process, even with inorganic material like plastic and aluminum foil mixed in with organic content. The inorganics are later expelled from the process, at which point they can be sorted and recycled. The alternative for most communities in Zambia is to send the waste to landfills, which are inconvenient and expensive for the local authorities, and the waste releases harmful toxins into the atmosphere and ground water.

After the gasification process, syngas is combusted, reaching very high temperatures which destroy the vast majority of toxins in the gas. Then the flue gas goes through scrubbing and filtering processes, resulting in two streams: clean and cooled exhaust released to the atmosphere, and a fly ash that is sold to companies involved in asphalt production.

The System

Process Overview and Systems Operating Modes Description

To produce syngas for the boiler, the gasification module requires MSW with organic content, and heated air. The main gasification equipment consists of a long tube, 10 ft in diameter and 120 ft long, arranged with a slight 4° slope and rotating at 2 RPM. The slope and rotation facilitate the movement of solid waste through the three zones, and reverse flow of the syngas up the chamber.

During startup an external fuel source of natural gas is used to be able to heat the initial volume of MSW. The MSW enters the gasifier through a hopper/ram system, where it is put in a low-oxygen environment. In Zone 1 of the gasifier the material is heated/dried up to 400°F in preparation for gasification. As the solid waste passes to Zone 2 of the gasifier, the solid organic material is converted at 850°F to syngas with a composition of nitrogen, hydrogen, oxygen, methane, and carbon monoxide. The inorganic solids are left whole for later recycling. In Zone 3, a controlled amount of fresh air is introduced to assist syngas in reverse flow and cool byproducts for exit from the gasifier. A high-powered magnet recovers all fine metals for recycle and reuse.

As the syngas works its way back up the front of the gasifier, it heats the MSW moving down the gasifier, eliminating the need for an external heat source once the system reaches a steady state. The syngas exits the gasifier via a hood into the boiler combustion chamber, where it is ignited, burning at approximately 4200°F. The high temperatures destroy 95% of toxins in the syngas, including dioxins and furans.

The combustion of syngas powers the steam circuit for the turbine and generator. The steam circuit functions in a traditional way similar to other single-cycle steam-based power plants.

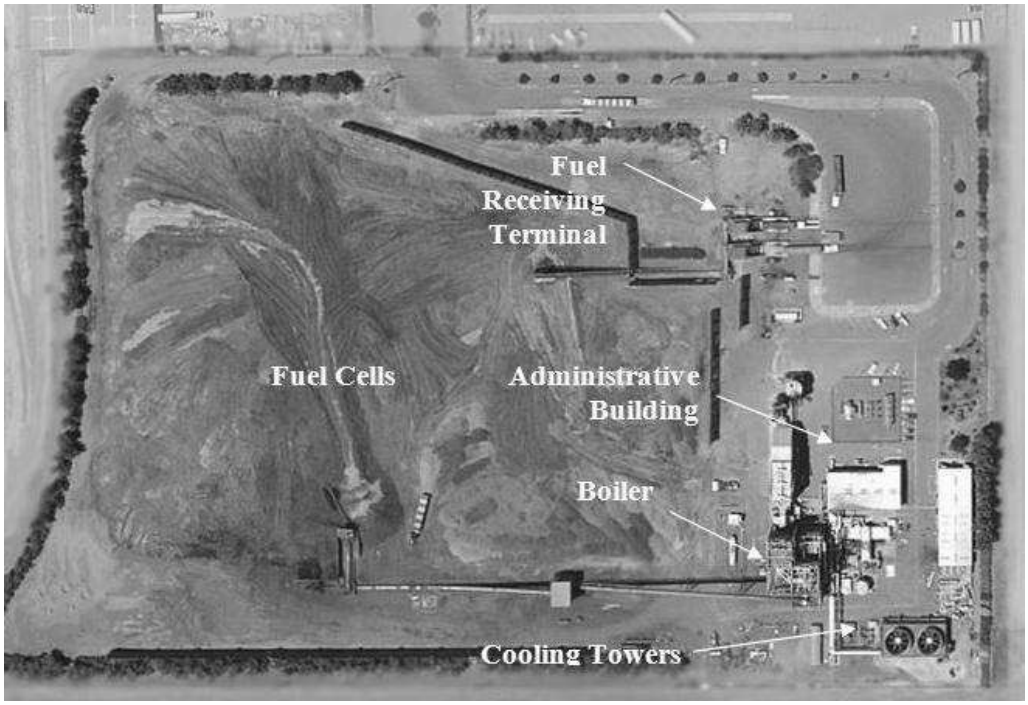
Hopper/Ram	Ambient temperature.
Zone 1 - Drying	400°F solid waste
Zone 2 - Gasifying	850°F conversion from solid waste to syngas
Zone 3 - Cooling	1800°F syngas, byproducts reduce in temperature from 850°F down.
Boiler - Combustion	4200°F combusted syngas
Scrubber	350°F flue gas

After scrubbing and filtering the flue gas, the clean and cooled exhaust is released into the atmosphere from a stack. For safety and emissions control, a Continual Emission Monitoring System takes digital readings every 3 seconds of the exhaust.

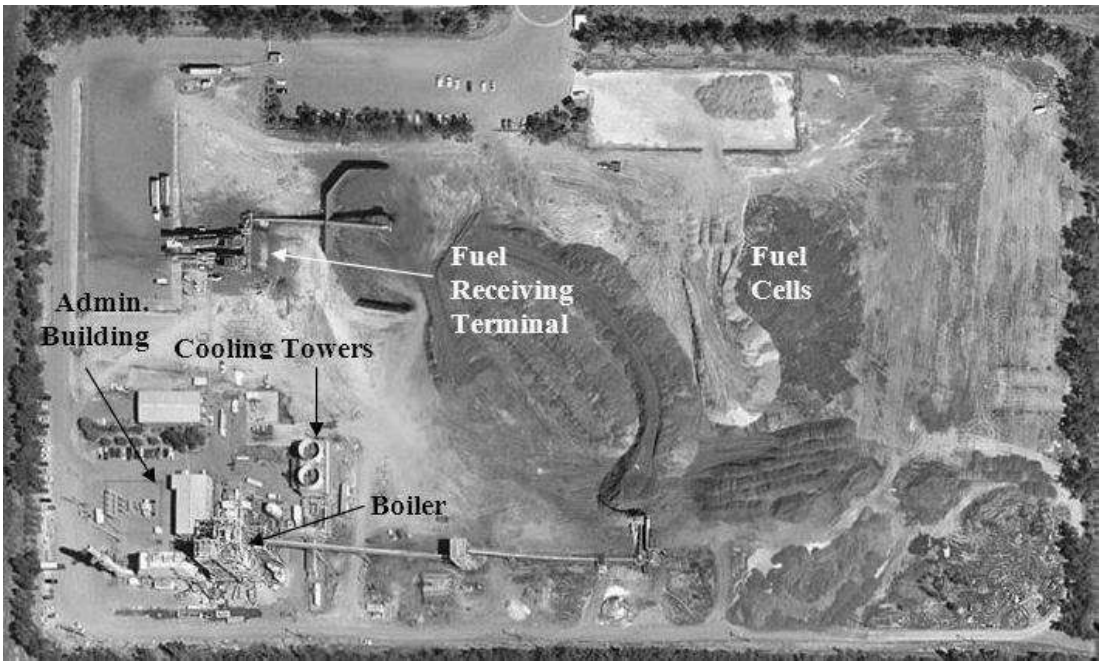
Basis of System Design and Location Selection

Overview of Gasification System

The basis of the projects is to utilize MSW from the local areas surrounding the plants to generate electricity while producing zero waste. Each plant has local communities that generate sufficient amounts of waste that is suitable for the gasification process. Contracts will be under development with Lusaka, Kitwe, Ndola, Kabwe and Chingola for the long-term off-taking of the waste. The plant will collect tipping fees for each ton of MSW that is brought to the plant. The tipping fees will be priced competitively with local landfills that serve as the next best option to manage the MSW.



Typical existing site layout



Typical existing site layout

Key Parameters	*The Perspectives*	*Actions*
Energy & Environmental Factors	The availability of energy is a significant factor in competitiveness and the viability of the markets. Positive environmental effects are critical in providing sound solutions.	**The company will invest into new technologies to improve the energy efficiency of the system and operations. Its processes reduce greenhouse gas (GHG) emissions. The Company will work with NGOs to protect the natural environment.**
Solutions	The business world is changing as technological advances and new methods are developed. Customers demand solutions.	**The Company embraces innovation and explores better ways to provide energy solutions. Strategic leaders recognize that they have to keep ahead of changes in the business world.**
Community Development	Strategic leaders are working to provide economic development and employment opportunities.	**Decisions and investments will be made to assure that they were the best possible from the social, economic and environmental perspectives.**
Well-Being	Well-Being requires due care for the health and safety of employees, stakeholders, suppliers and communities.	**Well-being involves engaging people and social issues and contributing to the greater good. The Company's initiatives are intended to create a better and safer work environment and communities for people to live.**

Stewardship	Stewardship is about reducing environmental impacts, improving economics, and enhancing the social dimensions.	**The Company will provide the necessary information and reports so communities and stake- holders can make informed decisions and be safe in their surroundings.**
Resource Protection	**Water and land are the important natural resources.**	**The operations will have minimal impacts on the ecosystems. The system is a self-contained operation.**

Table 1: Key Underpinnings

Location

Siting and Utility Requirements

The rotary gasifier needs a level area of approximately 25' x 140' for the gasification equipment, including additional space for maintenance access. It is possible that a reconfiguration of some equipment, like the existing conveyor belts, will be necessary to accommodate the new gasifier. All reconfigurations will be finalized and documented during the design phase.

Power Generation

Each facility has a rated output of 16 MW, and existing PPA's indicates a minimum 85% annual capacity factor. The new gasification equipment is sized to produce enough syngas for 16 MW output. The PPAs will be structured to reflect the existing output capacities, and to establish total capacity factors.

Renewable Energy Certificates

Each plant, as a MSW/biomass-based power supplier, is certified as a Category I Renewable Energy Facility.

Working with ZESCO, Alset Power Company expects to obtain a PPA that is acceptable and sufficient to cover all debt/loan costs and still return a fair profit on the Zero-Waste Power Plants that will be built in Zambia.

Natural Gas

Zero-Waste gasification power plants use natural gas as a start-up fuel and have gas supply agreements with a local natural gas or propane gas supplier for the purchase of natural gas under tariff rates and an agreement with ZESCP for the delivery of natural gas. ZESCO or a local gas company provides final distribution to the facility.

Utilities

Water and other site services will be operational in the respective sites of all properties.

Project Plan

Project Elements

The main objective of the Project is to create an integrated approach that focuses on managing the major technical, economic, and environmental issues, ensuring regulatory compliance, achieving operating efficiencies and cost savings, and improving the design, development, construction, and commissioning of the gasification system and broader facilities. The Projects embody a systematic, interdisciplinary approach for ensuring that the leaders and professionals meet all of its commitments and manage the dynamics of the technological and business-related requirements.

The business goal related to the Project is to achieve 'world class' performance in concert with technical specifications, mandates, standards, processes, and procedures. The main priority is the selection, articulation, development, and implementation of the MCFC system and the requisite operations. The main parameters include high-level quality, social responsibility, financial returns, and overall performance.

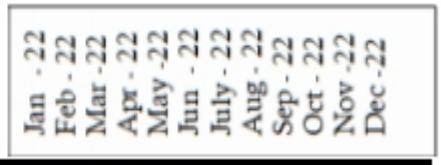
The key elements of the Project include the following:

- **Assessment and Pre-Project Planning Phase**: review technology and facility requirements; assess the key elements; describe and discuss system details with EPC contractor; define scope, and articulate the results. The expected outcome is an initial project report and a preliminary assessment and a pre-project plan.
- **Project Planning Phase**: develop definitive Project plan; outline key requirements and schedule; identify roles and responsibilities; determine resources and budgets; map out specifications for facility location; assess site options; determine infrastructure requirements; and develop permit requirements and action plan. The expected outcome is a definitive Project Plan.
- **Business Plan & Investment Approval Phase**: prepare definitive business plan with financial analysis and Pro Forma; obtain preliminary interest from the proposed Project Sponsor that is expected to lease the facility and equipment; Project Investor Lease negotiation with Project Sponsor; form and sign agreements.
- **Design Phase**: develop the engineering parameters and drawings for the gasification equipment; assess site options and select final location; integrate the gasifier with the facility layout and support mechanisms; obtain necessary government approvals and permits; develop infrastructure requirements; arrange for purchase contracts; approve all designs. The expected outcomes include approved specifications and drawings and approved permits.
- **Design-Build Phase**: finalize engineering and drawings; complete approvals; obtain all permits; place purchase orders on facility-related equipment and materials; produce equipment. The expected outcomes include the construction of the equipment and its installation and the completion of the related supporting infrastructure.
- **Commissioning Phase**: perform start-up procedures; evaluate the performance; test warranty aspects; correct defects and problems; prove the expected performance; finish the commissioning. Expected outcome is a proven and ready to operate facility.
- **Commercialization Phase**: operate facility in commercial mode.

Zambia - Development TimeLine

January 2022 Through June 2022

Begin Date	*End Date*	*Phase*	*Item*	*Duration*
15-Jan-22	31-Jan-22	Assessment and Pre-Project Planning	Review technology and facility requirements; assess the key elements; describe and discuss system details with equipment suppliers; make selection, and articulate the results. The expected outcome is an initial report, preliminary assessment and pre-project plan for Construction..	1/month – keep reviewing to June
15-Jan-22	31-Jan-22	Investor Engagement	Initial Investor Engagement and Delivery of Project Overview; Investor Commitment and Funding Requirements	2 weeks
01-Feb-22	01-May-22	Business Planning	Meet with Partners and prepare definitive business plan with financial analysis and pro forma; obtain commitment from primary partners, including EPC Contractor, Fuel Supply, etc.; present investor documents to project investors; engage with Sponsor and Off-taker. Obtain feedstock agreement and Power Purchase Agreement.	4 months ongoing
21-Jan-22		**Incorporation**	**Alset Power, Inc**	**Milestone**
25-Jan-22		**Organization**	**Organizational Meeting of the Partners, Zambia**	**Milestone**
01-May-22	30-June-22		Schedule meeting with Project Sponsor and Off-taker	2 months
01-Feb-22		**PPA**	**Power Commitments**	**Milestone**
01-July-22	31-Aug-22		ZESCO or Lusaka City prepares PPA documents	2 months
01-July22	01-Sep-22	Project Planning	Develop definitive project plan; outline key requirements and schedule; identify roles and responsibilities; determine resources and budgets; map out specifications for facility location; assess site options; determine infrastructure requirements; and develop permit requirements and action plan. The expected outcome is a definitive project plan.	3 months
01-Aug-22	30-Aug-22		Present document to LCC and execute.	1 month
01-Sep-22	01-Sep-22		Receive notice of availability of funds from Exim Bank	1 month
01-Sep-22	01-Sep-22		Final Start-Up Activities	1 month
01-Sep -22		**PROJECT STAR**	**Begin project development**	**Milestone**



June 2022 Through July 2023

Begin Date	*End Date*	*Phase*	*Item*	*Duration*
01-Sep-22	31-Nov-22	Design	Develop engineering parameters and drawings; assess site layout and select the location of gasifier; integrate the gasifier system with the facility layout and support mechanisms; obtain necessary government approvals and permits; develop infrastructure requirements; approve all designs. Expected outcomes include approved specifications and drawings and approved permits.	2 months
01-Aug-22	31-Jan-23	Design-Build	Finalize engineering and drawings; complete approvals; obtain all permits; place purchase orders on facility-related equipment and materials; produce equipment. Expected outcomes include the delivery of equipment and installation, and the completion of the related supporting infrastructure.	6 months

February 2023 Through May 2023

Begin Date	*End Date*	*Phase*	*Item*	*Duration*
01-Feb-23	31-March-23	Design-Build	Finalize engineering and drawings; complete approvals; obtain all permits; place purchase orders on facility-related equipment and materials; produce equipment. Expected outcomes include the delivery of equipment and installation, and the completion of the related supporting infrastructure.	2 months
01-Apr-23	01-May-23	Commission	Perform start-up procedures; evaluate the performance; link system to grid; test warranty aspects; correct defects and problems; prove the expected performance; finish the commissioning. The expected outcome is a proven and ready to operate facility.	1 month
01-May-23		**Commercialization**	**Operate Facility in Commercial mode.**	**Milestone**
01-May-23	31-Aug-23	Contingency	Project Contingency	3 months

Permits

The codes and standards for waste-to-energy plants are relatively well defined, and the Zambia plants will be permitted to process municipal waste in the future. Permits provided for the plants will be evaluated and the project team will determine if additional permits or modifications to the requested/applied ones are necessary prior to PPA finalization.

Regulatory Resources for Buildings

- International Code Council – Model Building and Construction Codes and Standards
- National Fire Protection Association – Model Building and Construction Codes and Standards
- International Association of Plumbing and Mechanical Officials – Model Building and Construction Codes and Standards

Financial Implication

Financing

We are first to make appication to COP26 - FP080 & FP099 for funding, then

The **Export–Import Bank of the United States** (abbreviated as **EXIM** or known as **the Bank**) is the official export credit agency (ECA) of the United States federal government.[1][2] Operating as a wholly owned federal government corporation,[1] the Bank "assists in financing and facilitating U.S. exports of goods and services".[1] EXIM intervenes when private sector lenders are unable or unwilling to provide financing, equipping American businesses with the financing tools necessary to compete for global sales. EXIM's aim is to promote U.S. goods and services at no cost to U.S. taxpayers, protecting “made in America” products against foreign competition in overseas markets and encouraging the creation of American jobs. Its most recent chairman and president, Kimberly A. Reed, was nominated by President Donald J. Trump on January 16, 2019,[3] and sworn in on May 9, 2019.[4] Her term expired on January 20, 2021 and her replacement has yet to be appointed.

The Export–Import Bank of the United States (EXIM) is a government agency that provides a variety of tools intended to aid the export of American goods and services. The mission of the Bank is to create and sustain U.S. jobs by financing sales of U.S. exports to international buyers. EXIM equips U.S exporters and their customers with tools such as buyer financing, export credit insurance, and access to working capital. Second, when U.S exporters face foreign competition backed by other governments, EXIM provides buyer financing to match or counter the financing offered by almost 96 ECAs around the world. The Bank is chartered as a government corporation by the Congress of the United States; it was last chartered for a three-year term in 2012. The Charter details the Bank's authorities and limitations. Among them is the principle that EXIM does not compete with private sector lenders, but rather provides financing for transactions that would otherwise not occur because commercial lenders are either unable or unwilling to accept the political or commercial risk inherent in the deal.[9][10]

The EXIM's products are intended to assist export sales for any American export company regardless of size. The bank's charter provides that EXIM makes available "not less than 20%" of its lending authority to small businesses although they have often fallen short of the 20% threshold.[11][12] In fiscal year 2013 however, 76% of the value of loans and guarantees went to the top 10 recipients.[13]

Similar banks, known generally as export credit agencies (ECAs), are operated by 60 foreign

countries.[14] As the United States is a member of the Organization for Economic Co-operation and Development (OECD) they conduct their activities by obeying OECD rules and principles. The goal is to permit exporters in various countries to compete on the basis of the quality of their goods and services, not on preferential financing terms. ECAs of countries, which are not participants of the OECD, such as the China Exim Bank,[15] Ex-Im Bank of Russia, Brazil, and India, are not required by their governments to follow OECD rules.

Benefits to the U.S. Exim Bank Structure

Specific benefits accrue to the investment structure offered the Company by US Exim Bank, to present to the Project Sponsor. These benefits are described below:

As per new FASB guidelines adopted on 02-25-16, a Power Purchase Agreement ("PPA") or Off-Take Agreement for a new energy project is now considered a lease for accounting purposes (a liability on the Energy User's Balance Sheet, with an offsetting "Right of Use Asset"). US Exim Bank's loan is also considered a liability on the Energy User's Balance Sheet, with an offsetting "Right of Use Asset".

Under a Finance scenario between US Exim Bank and the project owners, the current term of the financing is one year under current guidelines. However, the term does not begin until the Zero-Waste Power Plants are fully completed and operational. The construction time is expected to be anywhere from twelve to fourteen months. Based upon the timeline indicated, the power plant PPP venture would have at lease two years to seek a replacement loan for the Zero-Waste power plants. Obviously, this exercise is much easier once the power plants are up and running and producing a cashflow.

Lessee's bottom line on its P&L improves due to US Exim Bank's low Cost of Funds (1.5% simple interest), as the PPP group expenses out interest paid to US Exim Bank and depreciation, which is typically less than expensing out the entire payment under a normal bank loan at current interest rates.

Owner's Net Income (as described above), if held as "Retained Earnings", improves the Balance Sheet even further.

.Capital Budget

ZERO-WASTE PROJECT COST

Delivered Cost	$72,500,000
Construction of plants	**$50,697,500**
Construction of Gasifiers	**$16,000,000**
Business Investment Tax Credit	**(pending)**
Land	**$800,000**
Management and Engineering Fee (6.9%)	**$5,002,500**
Cash to PPP at Signing	***Pending***

*DETAILED PLANNING BUDGET by Year and 30 Month Project Total

Task | Item	*Group Total*
Management Team	**$1,386,000**
Project Team	**$936,000**
Retained Personnel	**$140,000**
Financial Management	**$4,000**
Fiduciary Corporate Management	**$63,000**
Project Execution	**$88,600**
Project Administration and Oversight	**$182,000**
DEVELOPMENT BUDGET TOTAL per Year	**$2,799,600**
Cost Contingency	**$139,980**
ANNUAL TOTAL with CONTINGENCY	**$2,939,580**
30 MONTH PROJECT TOTAL	**$7,348,950**
Pre-Funding Planning and Development Total	**$240,000**
TOTAL CAPITAL BUDGET	**$7,588,950**

Financial Summaries and Estimates

The offer of continued services under a PPA on the part of the Project Company Alset Power to the Project Sponsor, Zambia PPP, is detailed below under two scenarios: first with Lusaka keeping the Renewable Energy Certificates (REC's) or (Carbon Credits) to sell on the markets, and second with a discount for the REC's should Zambia PPP or Lusaka determine it better for their bottom line to give up them up for Alset Power to sell instead to the markets.

The Total Generation Cost of power offer summarized below and charted in the Pro Forma reflects an all-inclusive fixed, accelerated Generating and O&M price offer. The Exim Bank financing is not included in the PPA pricing between Alset Power and Zambia PPP, as the Exim Bank financing is between the Project Sponsor and the Project Investor directly. However, conservatively estimated Zambia PPP costs and revenues are included as a convenient point of reference on the financial underpinnings and relevance of the project to Zambia PPP's bottom line.

Assumptions and calculations are described in the ensuing pages prior to the introduction of the detailed Pro Forma.

COST OF POWER per kWh (items estimated)

FIRST YEAR SCENARIO	*WITH REC's*	*NO REC's*

O&M	($0.0300)	**($0.0300)**
Fuel	($0.0369)	**($0.0369)**
Water/Wastewater	($0.0005)	**($0.0005)**
Property Taxes	($0.0132)	**($0.0132)**
Management and Engineering Fee	($0.0063)	**($0.0063)**
REC DISCOUNT	$0.0000	**$0.0300**
Total Generation Cost $ ***(Paid to Alset Power)***	**($0.0868)**	($0.0568)
Finance Cost $ ***(Paid to Exim)***	**($0.0294)**	($0.0294)
ZESCO Transmission Cost ($0.10 per kWh) $	**($0.1000)**	($0.1000)
REC Sales ($40 per MW) $	**$0.0400**	$0.0000
	($0.1362)	

ESTIMATED SCE OPERATING RETURN per kWh

FIRST YEAR SCENARIO	*WITH REC's*	*NO REC's*
Net Cost of Power	**($0.1362)**	($0.1462)
Projected Revenues|Retail Sales	**$0.1800**	$0.1800
Estimated Operating Return to ZESCO	**$0.0438**	**$0.0338**

Pro Forma

Pro Forma Income Statement listed below include Lusaka power plant Alset and Zambia PPP net operating revenues from the Project (projected) in two separate statements: first as projected if Zambia PPP maintains the Renewable Energy Certificate values; and a second set reflecting Lusaka plant use of the REC's in exchange for a reduced cost of power ($0.03 per kWh). We will need to verify if REC's are valid and permissible in the country of Zambia.

The statements are shown by quarter for the first three operating years, and annually from years 4 through year 20 at the end of the contract period.

The following assumptions govern the figures listed in the Pro Forma Income Statements:

Accelerator, Cost of Lease, and General Comments

All income and expenses listed include an accelerator at 2% per year, with the exception of the finance carry costs, which is shown simply as a levelized, estimated cost based on a first-year lease at a cost of capital of 1.5%, pending final discussions between the parties related to the cost of capital and payment terms.

Facility Development Costs that are included in the projections reflect a fixed price; turnkey project delivered to ZESCO.

Rate and Unit Costs

Energy Sale Price

$0.10 / kWh (based on requested PPA)

Cost of Fuel

Based on supply quantities available:

Lusaka: $25.46 / ton MSW

Anticipated Cost of Capital

1.5% for Exim Bank or [Investor offer is between 4 and 5% with an anticipation that it may be at the low end of 4%.]

Estimated Transmission Cost

$0.06 per kWh

Commercialization

Commercialization is projected to begin in 2022 assuming a start date triggered by availability of Investor funds of September 2021.

Capacity

The 16 MW MSW electric power generating facility will operate at an 85% minimum annual capacity factor for an average of _____ MWh at Lusaka annual electric power generation.

Pro Forma Income Statement | LCC ASSUMES REC'S (2020)

Pro Forma Income Statement | LCC ASSUMES REC'S (2021)

Pro Forma Income Statement | LCC ASSUMES REC'S (2022)

Pro Forma Income Statement | LCC ASSUMES REC'S (2023-2027)

Pro Forma Income Statement | LCC ASSUMES REC'S (2028-2032)

Pro Forma Income Statement | LCC ASSUMES REC'S (2033-2037)

Pro Forma Income Statement | LCC ASSUMES REC'S (2038-2039)

Pro Forma Income Statement | Alset ASSUMES REC'S (2020)

Pro Forma Income Statement | Alset ASSUMES REC'S (2021)

Pro Forma Income Statement | Alset ASSUMES REC'S (2022)

Pro Forma Income Statement | Alset ASSUMES REC'S (2023- 2027)

Pro Forma Income Statement | Alset ASSUMES REC'S (2028- 2032)

Pro Forma Income Statement | Alset ASSUMES REC'S (2033- 2037)

Pro Forma Income Statement | Alset ASSUMES REC'S (2038- 2039)

Summary Pro Forma Downside Case

(90% CONFIDENCE INTERVAL)

RISK FACTORS

Risk Area	Response
Power Prices	Long-Term PPA – 20 Year power purchase agreement with fixed pricing insulates the Project from all merchant price risk.
Credit	Dependent on the credit quality of the Power Purchaser
Performance	Significant performance benefits
	Reputable Vendor
	Warranty
	Power Output Guarantee
Late Completion	Guaranteed Delivery Date – The Project provides for a feasible and achievable time period marked by a Date Certain and enhanced by additional Lease Contingency funds provided by Investor.
Cost Overruns	Fixed Price on Facility Cost and Delivery of Services
Operating Expenses	Warranty Maintenance and Service Agreement
Casualty, Loss, Failure of Equipment or FM Event	Property Insurance – The Project will purchase property insurance
	Business Interruption Insurance – The Project will have business interruption insurance covering casualty and force majeure events

Summary

Compelling Reasons

Sustainable power generation endeavors to systematically eliminate negative impacts by identifying and avoiding questionable products, processes, and/or activities, preventing impacts whenever possible, and mitigating all negative aspects to the extent possible. The primary focus is on using safe and effective resources and technologies that lead to sustainable solutions through proper resource usage, process efficiencies, resource recovery, and waste minimization. Resource usage and the efficiencies of the processes are primary considerations because upstream inputs have dramatic implications on downstream activities and outcomes. The ideal process would convert inputs into outputs without any wastes; therefore, resource utilization would be the most efficient. Increasing efficiency, effectiveness, performance, and benefits and decreasing defects and burdens are the critical factors in sustaining growth and business value.

KEY PROJECT STRENGTHS

- ✓ ***Reliable Baseload Electric Power***
- ✓ ***Zero Waste Fuel Process***
- ✓ ***Alleviates Landfill Pressures***
- ✓ ***Strong Project Economics***

Lessee's bottom line on its financial statement improves dramatically due to a low cost of funds, as Lessee expenses out interest paid to US Exim Bank

- and depreciation, which is significantly less than expensing out the entire lease payment under an Operating Lease.

- ✓ ***Renewable Energy Certificates (REC's)***

- Qualifies for compliance REC's in Zambia (Carbon Credits?)

- ✓ ***Leading Technology and Manufacturer Support***

- All in one package managed by seasoned engineering professionals minimizes development inefficiencies and enhances product quality
- Plant designed for performance, positioning the plant for optimum operations
- Efficiencies optimized in the balance of plant increases performance potential and lowers operating costs

- ✓ ***Favorable Asset Treatment***

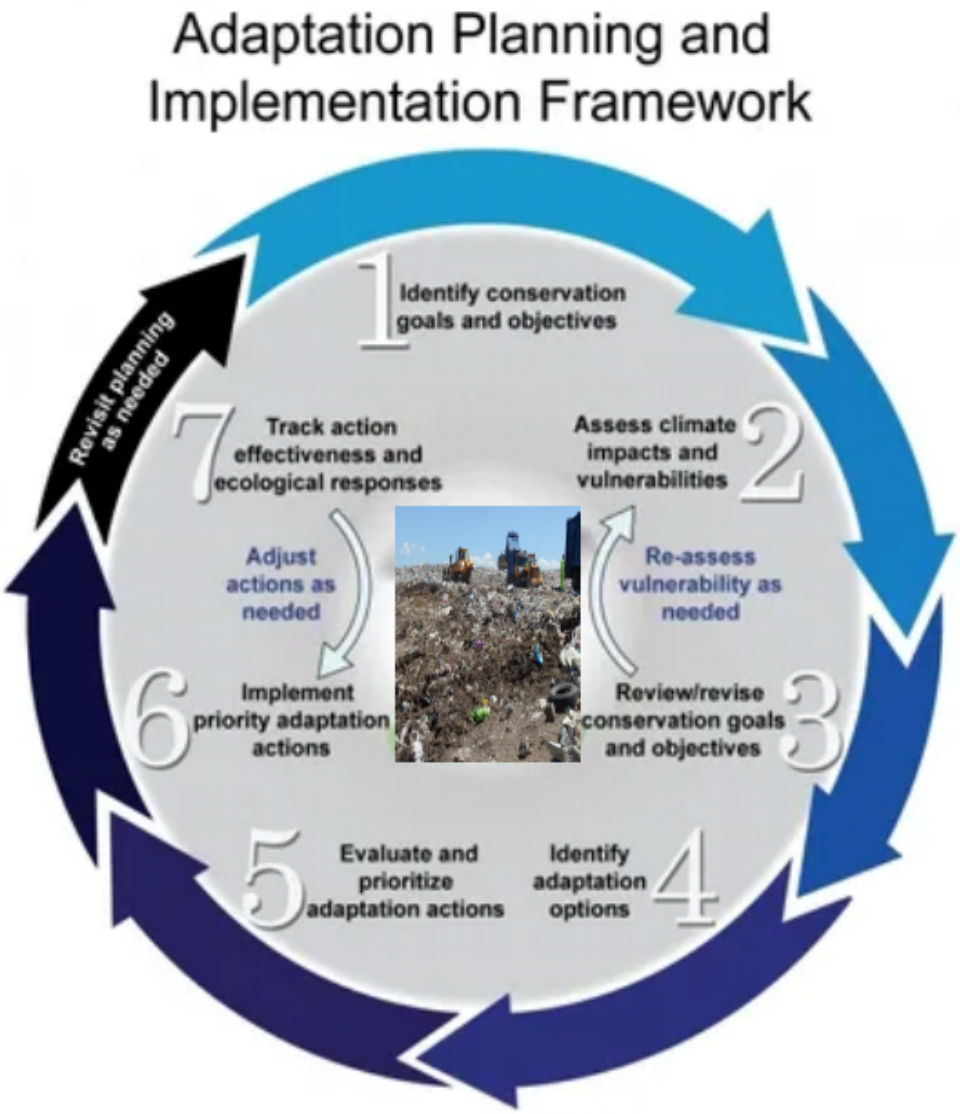
- In addition, the improvement of Lessee's bottom line (as described above), if held as "Retained Earnings" or "Increase of Net Assets", improves the Balance Sheet even further.

Steps Going Forward

- Expression of Interest from Lusaka City Council
- Investor Engages with Lusaka City Council and Prepares Final Agreements
- Alset Power Delivers Agreements to Lusaka City Council
- On signing, Investor Delivers Contingency Funds to Lusaka City Council after approval from funding source, and Makes Project Funds Available triggering Project Start-up

Ministry of Green Economy

- Zoom Call meeting 2nd February 2022
- Send Project brief for review - sent in February 2022 / send to Minister of Green Economy
- Obtain Letter of support Mandate Letter from PS
- Zoom Call to be arranged for "Concept Note" submission to Development Bank of Zambia (DBZ) for consideration of COP26 - FP080 & FP099 **75%** funding to be agreed by COP26 Board
- Followup meetings to be arranged as and when required
- Communicate with Banks & DBZ & FP080/FP099 to release of approximately $1 million for Feasibility Study, Grid Connection, EIA, Hydrological, Topographical studiesand Public Awarness and participation.
- Make application first to USA TDA for Feasibility study funding.
- Followup with the "Green Growth Compact Agreement" between the UK & Zambia Government for obtaining the remaining 2**5%** of finance required if Private Banks do not provide.



As Zambia transitions into the Circular Economy then adaption to Climate Change is important. The monitoring of all waste date tonnage, emissions, electricity production from each new waste plant can be sent to an Environmental Management System (EMS) software package at the Ministry of Green Economy to be used for any new measurers needed to adapt to Climate Change such as more Renewable Energy plants such as Solar Farms or smaller Off Grid Solar for homes.

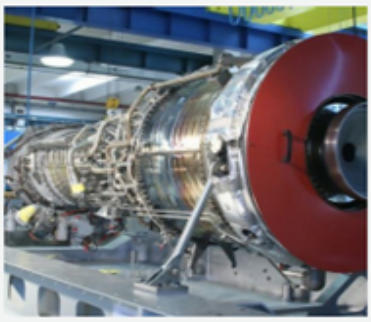
Technical Capabilities – Siemens have built over 1,000 Power Plants & Alset Power plants below –

Currently developing over 300 Gasification plants globally – Kenya, Zambia, Ghana, Nigeria & Mexico

PROJECTS

Partial Construction Project Management Reference List Gas Turbine & Combined Cycle Plants

Gemma Power Systems, Monroe, GA
Installation of Westinghouse, 501-F Gas Turbine



Aalborg Industries, Inc., Erie, PA
Install 4 Heat Recovery Steam Generators

PG&E National Energy Group, Napoleon, OH
50 MW Power Plant-Peaking Facility, 2-GE Frame 5

PG&E National Energy Group, Bowling Green, OH
50 MW Power Plant – Peaking Facility, 2 – GE Frame 5

City of Calhoun, Calhoun, GA
22 MW Power Plant – Peaking Facility, 1 – LM 2500

City of New Smyrna Beach, New Smyrna Beach, FL
50 MW Power Plant – Peaking Facility, 2 – Frame 5

SW Energy/Sweeny, Old Ocean, TX
335 MW Cogeneration Plant, 3 – 501D5A

Papeles Venezolanos, Venezuela
30 MW Combined Cycle Power Plant, 1-GE Frame 5

Saranac Energy Company, Inc., Plattsburg, NY
240 MW Combined Cycle Cogeneration Plant, 2-7EA w / ACC

CSW Energy/ARK Energy, Bartow, FL
103 MW Combined Cycle Cogeneration Plant, 2-LM 6000 w / 25 MW STG

E84104, Eastern Illinois University, Charleston, IL
Fuel: Coal fired chain grate boiler

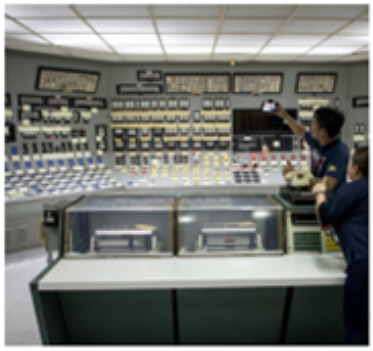
Vineland Cogeneration, Vineland, NJ
46 W Combined Cycle Cogeneration Plant, 1 – LM 6000 w / 12 MW STG

E86138 Kent State University, Kent, OH
Fuel: Coal fired chain grate B&W boiler

E86070 Union Carbide Corp., Charleston, WV
Fuel: coal fired chain grate boiler #4

E87032 Montgomery County Incinerator Plant, Dayton, OH
Fuel: Trash incinerator chain grate CE boiler

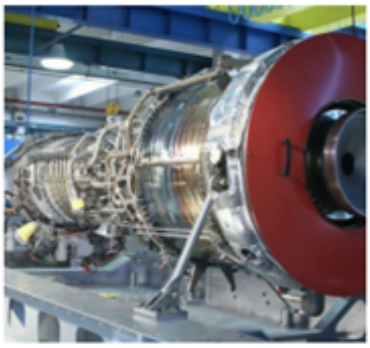
E86152 Innovest IBAE, Kuala Lumpur, Malaysia
Fuel: Heavy oil (3-6% S) oil fired IBAE boiler



E94124 Taroko Textile Corp Ltd, Taipei, Taiwan
Fuel: Heavy oil (6% S) fired Chin boiler

E94115 Taroko Textile Corp Ltd., Taipei, Taiwan
Fuel: Heavy oil (6% S) fired Chin boiler

E9714 Ajinomoto Vietnam Co Ltd, Dong Nai Province Vietnam
Fuel: Heavy oil (6% S) fired (4) Danstoker boilers



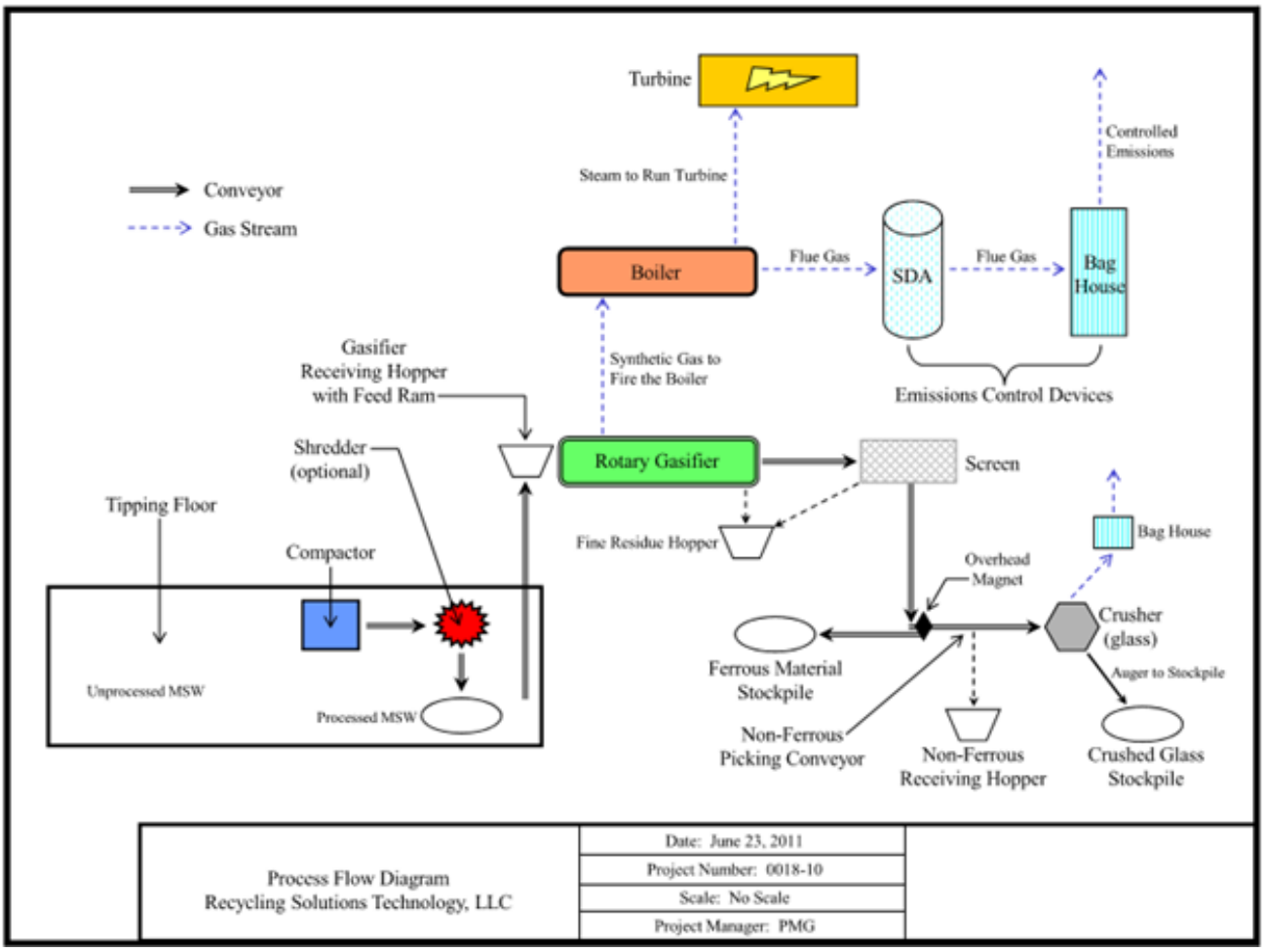
E94122 Long Chen Paper Co Ltd, Chang Hua Hsien, Taiwan
Fuel: Heavy oil (6% S) fired Chin boiler

Installation of Westinghouse
501-F Gas Turbine

E20038 Nestle Foods (M) Sdn Bhd , Shah Alam, Malaysia
Fuel: Heavy oil (6% S)

E84104, Eastern Illinois University, Charleston, IL
Fuel: Coal fired chain grate boiler

Site Layout


Turbine
Steam to Run Turbine
Controlled Emissions
Conveyor
Gas Stream
Boiler
Flue Gas
SDA
Flue Gas
Bag House
Synthetic Gas to Fire the Boiler
Emissions Control Devices
Gasifier Receiving Hopper with Feed Ram
Shredder (optional)
Rotary Gasifier
Screen
Tipping Floor
Compactor
Fine Residue Hopper
Bag House
Overhead Magnet
Crusher (glass)
Ferrous Material Stockpile
Auger to Stockpile
Unprocessed MSW
Processed MSW
Non-Ferrous Picking Conveyor
Non-Ferrous Receiving Hopper
Crushed Glass Stockpile
Process Flow Diagram
Recycling Solutions Technology, LLC
Date: June 23, 2011
Project Number: 0018-10
Scale: No Scale
Project Manager: PMG