



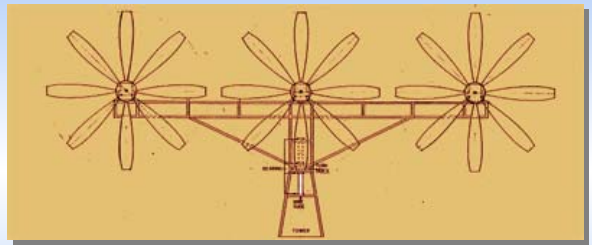
# ETHIOPIA

## ENERGY INDEPENDENT BY 2012!

### Distributed, Renewable Energy:

**LOW PROFILE WIND TURBINES-** Low cost, low profile, multi-fan wind turbines produce much more electricity from a wider range of wind speeds than the current market leaders. Each turbine blade has double the energy out put of any similar system and adjusts to the power load. It produces electricity at wind speeds down to 5 miles per hour.

These towers average 40 - 20 foot high. Maximum out put per tower 20kW with 25 towers per acre. 6 fans per tower with 8 blades per fan with a 12 foot diameter.



**VERTICAL AXIS WIND TURBINES-** Inexpensive and unique design creates pull on the back side contributing to 40%+ wind conversion. It doesn't kill birds, runs more quietly, can be installed in cities and blends better into landscapes. Generating costs estimated at 2.5 cents per kilowatt-hour. Smaller units working together will be more cost effective to build and maintain.



**ROTARY ENGINE WINDMILL COMPRESSOR-** The Rotary Compressor Engine is a positive displacement rotary device that efficiently compresses air to more than 150 pounds per square inch, in a variety of sizes and configurations. Beyond efficiency, this system is cost effective and enables energy storage through compressed gas. The use of this device will augment windmill systems by allowing them to store "energy" underground in the form of compressed air to be used at any time on a turbine or air motor.



### Water Solutions:

#### **SOLAR POWERED, LOW COST OZONE / ULTRAVIOLET**

**PURIFIERS-** Millions of senseless deaths and serious illnesses each year can be traced to unclean drinking water. This inexpensive and compact device can be used in cisterns, reservoirs, or wherever water is stored or standing to eliminate organic threats such as bacteria, viruses, and parasites. It is powered by a simple solar panel and small long-life battery. This is a compelling product for distribution through a variety of relief organizations that have few answers to critical potable water health issues.



### **LOW-FLOW HIGH POWER WATER TURBINE-** These affordable water systems generate



electrical power from a small profile (roughly 1.5 square meters can produce 100 KW peak). Hydro-electric power is currently one of the most cost-efficient and abundant renewable energy sources, but suffers from the large infrastructure required to build dams. This technology will broaden the market by dramatically multiplying the applications through small-distributed units.

Our very advanced two-stage turbine allows for low-pressure to high power output.

### **Waste to Energy:**

#### **MINI -GASIFICATION-**

There is an opportunity for Mini-Gasification to be used for yard and debris clearing to provide clean, renewable power as well as water heating and micro-steam turbine energy production. With the immense amount of collectable wood and debris available you would have enough to sustain a small community. 1 ton of material equals 800 Kw of energy!

This smaller system incorporates automated fuel feed, a patented combustion system that preheats combustion air to 1000°F in a multi-cavity refractory ceramic heat-exchanger, a highly efficient down-draft counter-flow heat-exchanger that condenses the moisture out of the exhaust, and automated programmable electronic controls increasing overall efficiencies of biomass energy from 65% to over 90%, even with wet fuels.



Wet fuels, with up to 2/3 their weight in water, are dried and vaporized (pyrolysed) by the highly preheated incoming combustion air. The additional steam acts as a catalyst, improving mixing, speeding heat-transfer and shortening the flame path.

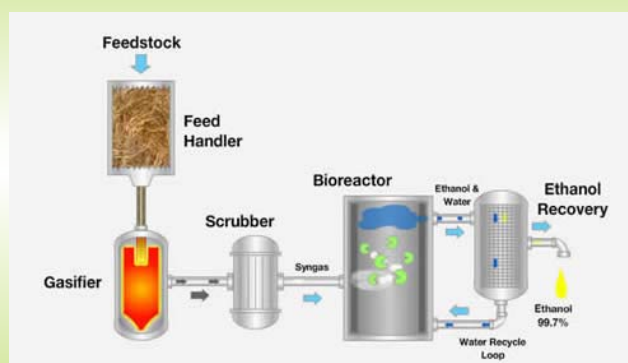
There is a tremendous amount of cheap, usable energy available to use in the form, tree trimmings, sawdust, land-clearing waste, logs, chunks, pellets, peat, and agricultural waste.

This system can reduce waste products from by 80-90% percent, and extract that material and convert it into clean energy. Its particulate emissions are 65 times cleaner than the best woodstoves and several times cleaner than the best pellet burner, and considerably cleaner than the average oil furnace. If you are

going to clear up miles of forest this is the best option for doing it cleanly while producing energy to sell.

The basic design would be a Ceramic Stove with a Glycol Steam Boiler attached to a turbine to provide electricity.

### **GASIFICATION-** This system can reduce waste products from sewer sludge to common trash (MSW)



by 80-90% percent, and extract that material and convert it into clean energy or fuels. In this business model, people will pay you to accept the raw materials you need (tipping fees), you can efficiently solve several environmental threats (eliminate harmful methane emissions, take the stress off diminishing landfill space, and displace energy production that otherwise would use fossil fuels), and that produces a valuable commodity to sell.

**ANAEROBIC DIGESTION**-This technology not only disposes of organic waste streams. It efficiently creates biogas, biofuels and other valuable byproducts, including bio-hydrogen and bio-methane gases. These biogases are clean fuels, usable for generating electrical and thermal energy in potentially large enough volumes to penetrate substantially into the existing petroleum and petrochemical markets.

The process is simple and stable. There is no dependency upon unproven technological developments in the process design.



**PLASMA WASTE-to-ENERGY**- One of the most powerful technologies for the treatment of toxic, organic or plastic waste is plasma-chemical technology based on a plasma arc, which yields synthesis gas (a mixture of CO and H<sub>2</sub>). The main advantages of plasma-chemical technology is that it can be universally applied to a wide variety of waste (including organochlorine, medical, and military wastes) and can be implemented in relatively small-sized mobile modules.

However, wide practical application of plasma technologies is hindered because the existing plasma arc torches erode and require costly inert gases as a plasma-forming agent. A new paradigm has been developed based on liquid metal electrodes which do not erode. Therefore, the service life of the plasma chemical reactor is characterized by a practically unrestricted service life of the electrodes.



With liquid metal electrodes, high efficiency steam can now be used as a plasma-forming gas and the reactor capacity can be increased practically without restriction. Further, metals in the waste can potentially be extracted.

## **SOLAR & THERMAL ENERGY:**

### **SOLAR CONCENTRATION WITH MIRRORS OR FRESNEL LENSES-**



The advantage to this design for converting Sun into steam energy is that its scalable, affordable and counts as Solar Power for grants, rebates and incentives. A unit similar to the one above can produce around 10Kw. for around \$2-4. per watt to install.

Solar Panels run between \$12 to \$20 Kw to install with the entire infrastructure.

One acre of these units can produce between 500 Kw to 1 Megawatt of power. This will allow you to be a "Solar Farm" during spring and summer.

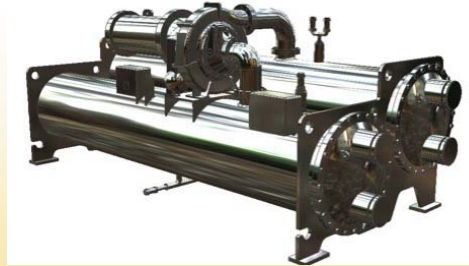
In addition it will also flash boil water for heating and distillation and provide radiant heating.

## WASTE HEAT RECOVERY PLANT-

Thermodynamically, this is also one of the most efficient ways to convert thermal energy (heat) to mechanical energy.

The Freon Turbine system is a unique arrangement of off-the-shelf components combined with our patented *Thrust Tube Turbine*. The components consist of commercially available turbo-expanders, heat exchangers and a pump, available from numerous manufacturers.

The system components have millions of hours of reliable and nearly maintenance free service, primarily in refineries, petrochemical and geothermal plants. Turbo-expanders have been used for decades in hundreds of applications and are used to drive generators, pumps and compressors in the most demanding of applications.



**Quantum Green Technologies, LLC** (“QGT”) commercializes and integrates clean energy, water, waste and transportation solutions. QGT arranges funding, assists in building profitable businesses, and provides channels to worldwide markets through licensing and projects.

QGT has an extensive integrated portfolio of “clean” technology solutions. The technology portfolio is based on rapid commercialization and risk management. Many of the technologies are focused on broad disruptive market entry by providing solutions to developing nations. The scope is global.

QGT can provide professional management, finance, marketing, business development, strategic partnerships, distribution channels, finance, etc. QGT is accomplished in working with Universities, Government agencies and even the most eccentric inventors.

QGT also provides advice to the investment community, e.g. hedge funds, LEED projects, and developing-nation sustainability projects. With extensive industry contacts and relationships, QGT is able to bring a wide range of established solutions to almost any sustainability project anywhere in the world.

QGT consults, develops and implements systems that are truly sustainable.

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