Product Overview

Waste Disposal (With Option For Energy)	**The Frontline Waste ("FW") Mobile Combustor is a disruptive technology for waste disposal. It is an ultra-high temperature mobile combustor capable of being configured to destroy combustible Materials - most solid waste that can burn with lower than 30-35% moisture content. About the size of semi- trailer, it can fit into an open top sea-land container for ocean transport with no disassembly, be attached and driven by semi-trailer truck, or be mounted on a rail car.** **With an intake of 1000-2000 pounds of waste per hour, the unit can operate 24/7 and produce about net 75 kW/h of grid or off-grid energy.**
How It Works	**THE COMBUSTOR:** **Due to a proprietary control system and high-temperature ceramic insulation design, the production unit operates far differently than a normal combustor. First, due to its inconel insulation, it operates at an average heat (2200°F) that is about 2-3 times hotter. Second, no supplemental fuel is required for the operation of the unit. Last, the control system monitors and regulates three key ingredients to maximize combustion efficiency, i.e. fuel feed, oxygen content, and dwell time. Imagine a steady intake of grinded wood pieces of treated wood (formerly part of a railroad tie or utility pole). Within about 15 seconds of entering the furnace, the chemicals contained within these treated wood pieces are vaporized. Less than two minutes later, 99% of the debris, itself, being subjected to the same 2200°F, has also combusted. The rest is reduced to ash, and "clean exhaust air" (460°F) that safely leaves the stack.** **THE POWER UNIT:** **Intake of appropriate waste streams into our FW Mobile Combusting Unit. We destroy waste streams. Unit produces combustible hot air exhaust (460°F) that is fed into an Organic Rankine Cycle power generation system (ORC), and converted into about net 75 kW/h of electricity that is fed back into an off-grid power source or into the grid.**
Current Production Status	**A "Demo Test Unit" was run for about 1000 hours of operational testing at high temperature, using wood chips/pellets as fuel, with emission tests conducted by a certified emission testing company showing emissions meets current EPA standards. In addition, the emissions testing company has provided an opinion letter that the unit would meet EPA standards for treated wood waste with appropriate pollution abatement equipment installed. A qualified California manufacturer has been identified to build the production unit.**

Product Features

THE COMBUSTOR		
Mobility	**The unit is configured with combustor mounted on its own base frame with removable wheel sets and the fuel feed component is loaded on its own truck. Fits on back of semi-truck trailer, or mounted on train car or fitted on a boat/barge. Can be fit into an open top sea-land container for ocean transport. Takes only 3-4 hours to be fully operational after each move**	
Combustion Temp	**2200°F (normal incinerator: 800-1200°F)**	
Best Waste Streams: What It Can Destroy	**Treated wood, or wood-based debris with low or no water content; agricultural waste; plastics; sorted recyclables from municipal waste; non-metal hospital waste streams, dried animal waste (chicken, cow).**	
Worst Waste Streams - Limitations: What It Can't Destroy Well	**Pig waste due to high water content, unless dried. Non-combustibles such as cans, bottles, tin foil, etc**	
Best Solutions	**1) Based on volume: Destroy on-site or move to central location to destroy** **2) At landfill – as alternative to save space**	
Starting Fuel	**Minimal amount of diesel for each cold start. Can be shut down for 48 hours and self-reignite**	
Supplemental Fuel Requirements/Day	**Effectively self-fueling. None**	
Type Of Burner	**Single stage fluidized bubbling bed combustor with internal cyclone separators for particulate removal**	
Ash Production	**Minimal. Less than 1% for wood chips.**	
Require Baghouse and/or Wet Scrubbers	**Depending on the waste stream to be combusted. Built-in cyclone separators may be sufficient.**	
Manpower To Run Unit	**One or two people, depending on situation and use**	

OUR ORC POWER GENERATION UNIT	
Mobility	**Power unit can be transported by truck and can be configured for mobility, too. Can move to another location if needed.**
Parasitic Load	**The power to run system is 20 kW/h for each component (combustor and ORC)**
Net Output	**115kW/h less Parasitic Load of both components= 75 kW/h net**
Power Generation Flexibility	**Power output is variable with the amount of fuel fed into unit. During day time, maximum intake of agricultural waste (assume 1000 to 2000 pounds per hour) would produce maximum power. At night, unit could be idle or lightly fed to produce lower energy output required.**