

## **Field Waste Disposal and Energy Generation for the Warfighter**

Modern incineration and energy recovery are known as “WTE,” or “Waste to Energy.”

The American Warfighter has nothing close to this on today’s battlefield, nor does it come to the field after hostilities have ceased.

This proposal is for the supply of healthier battlefield incineration and waste disposal which can be easily operated by any practical campers, boy scouts, or farmers without extra training. When the field fighting has moved on, this field combustion system can be fairly easily field modified to incorporate modular addition(s) of hot water boilers, and air pollution control devices. The whole system can be further modified to provide steam and electricity for use at the encampment when the field circumstances stabilize and a lengthier stay is expected. The modular components are so relatively inexpensive as to suggest that they be left after long term encampments for the local population to continue using when our warfighters move on to other endeavors.

Unfortunately, right now battle field trash is dozed into a pile and set afire right after hostilities have tapered off and our warfighters try to straighten up their vicinity and settle in for an unknown length of time. Our troops and the unfortunate civilians in the vicinity of the encampment then begin living in the constant haze of the worst sort of air emissions possible. It can't be healthy. As soon as possible some sort of pit burning operation is set up to "improve" the situation. And then the troops live with that for months and months.

How long will the encampment be here, or there? It is easy to see that while hostilities remain possible, it is not easy to improve this crude method of solid waste disposal. Unless it seems obvious that the troops will be there for years, that pit burn situation drags on and on. If the encampment/compound really seems to be "permanent," eventually a modern waste burning plant may be bid, purchased, sent to the field, erected, and started up. But that is costly, and it takes "forever" to get it done while the troops and the local neighbors continue to breathe the worst sort of ground level smoke emissions.

What we need for the warfighter is a mobile unit of some sort that is fairly cheap and simple. It needs to be one that any former "Boy Scout" or "Camper" can set it up and make work. One that is much cleaner than the pit burn pile, and just about as easy to move.

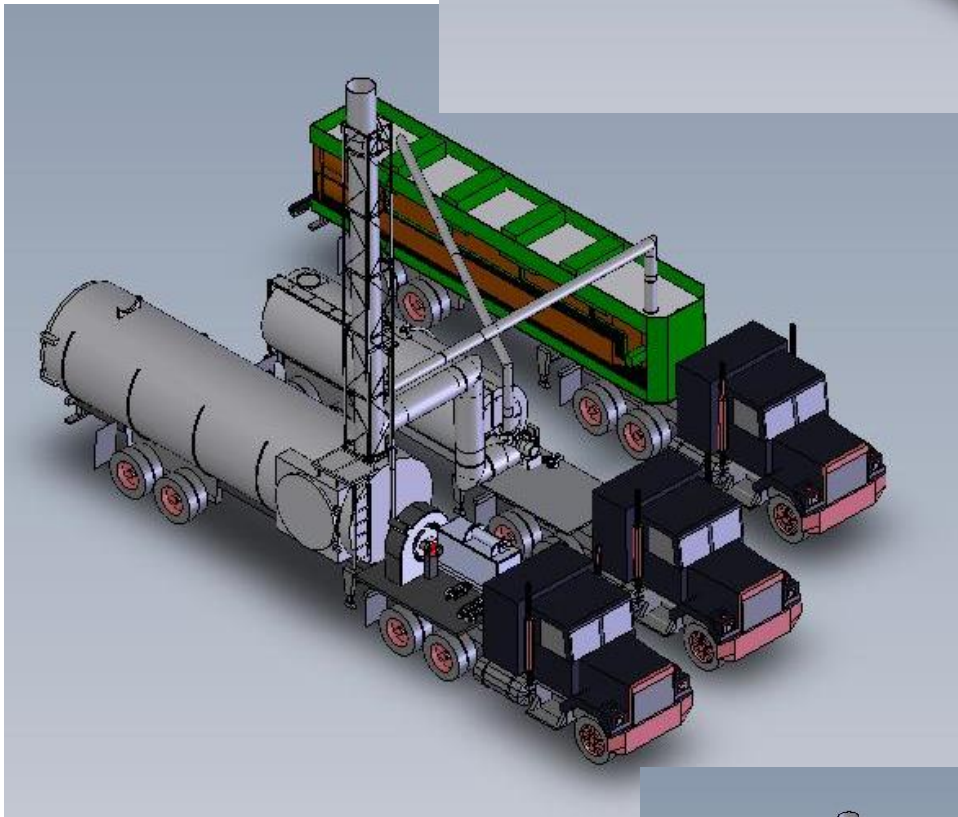
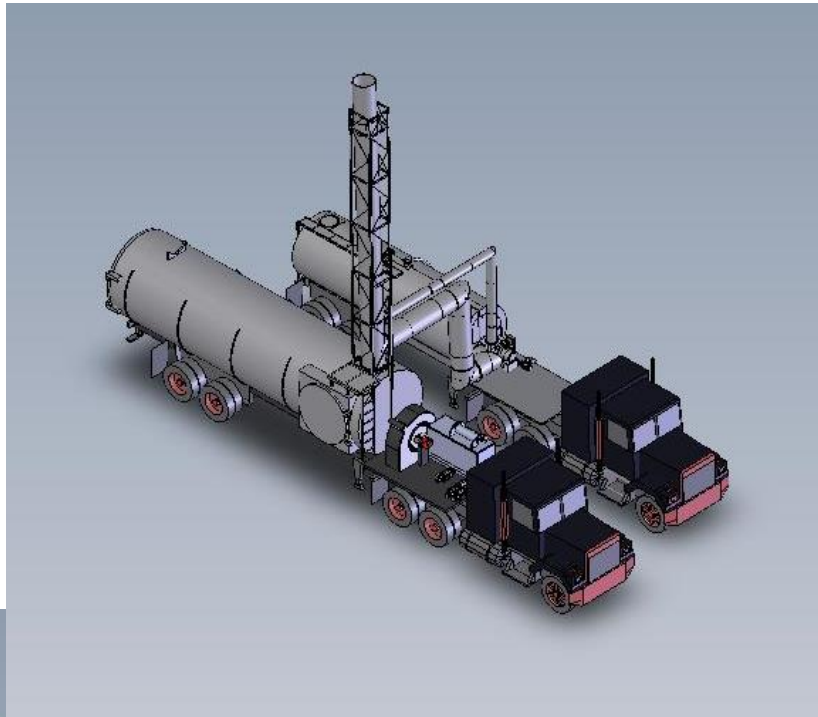
This is possible.

It can be accomplished with a series of modular truck mounted components, the first being a simple burner with a stack to lift the awful (but improved) smoke 30 feet or so above the ground. This first field unit would be very much like a huge wood stove, hand stoked, and relying on the heat of the combustion to suck the smoke up the stack, just like a wood stove in a home. Every so often the “ashes” would be removed with long “rakes” while the fire was banked for the process. Then more burnable waste would be hand fed and so on. Simple, crude, but very effective at getting the smoke off the ground and away from the Warfighters.



With the present pit burn pile there is no stack and the smoke plume wafts along the ground where the Warfighters cannot but breath the unhealthy products of their crude pit fire.

As the warzone settles down, a second truck with a hot water boiler can be attached for the provision of water for showers, cooking, etc. A third trailer with Air Pollution Control systems can come shortly thereafter, though each of these requires a better trained field operator.

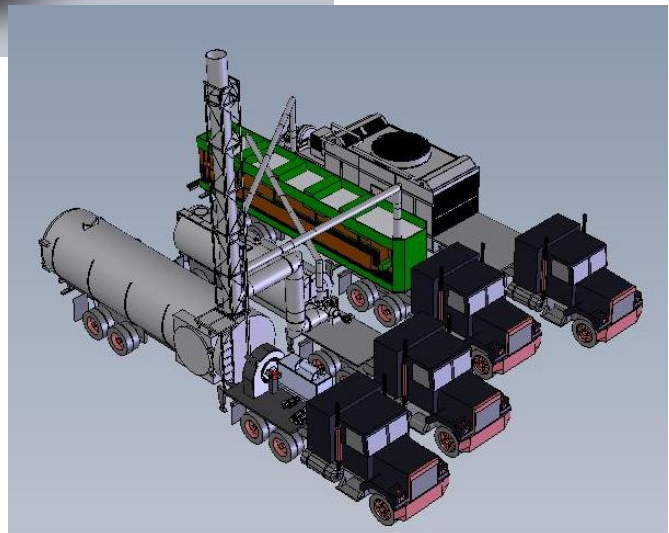


When decisions are made to keep the encampment at the location for a length of time, the boiler can be easily converted to higher pressures and steam production and additional trailer mounted units can be brought in to generate electricity and condense the exhausted steam back into water for reuse in the boiler. At this point, trained technicians would be needed for safe operation.

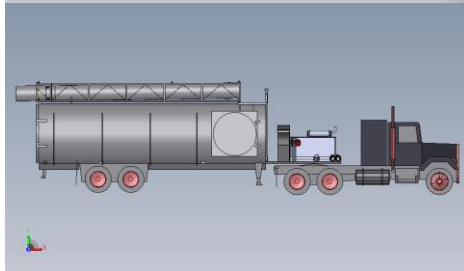
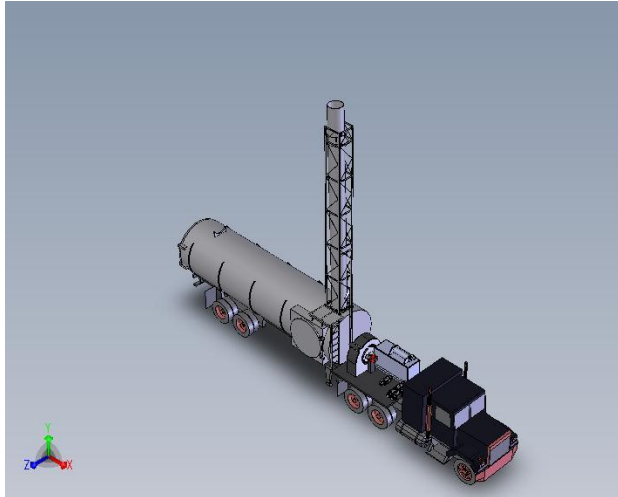
All this can be done with mobile, rugged, semi-truck mounted systems designed to be easily interconnected with simple tools in a recently hostile war zone encampment.

These pictures are meant for illustration, only, the highway tractors are only meant to provide some relative sizing.

Estimated pricing follows.



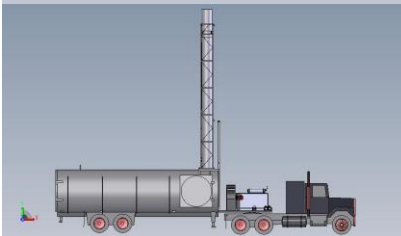
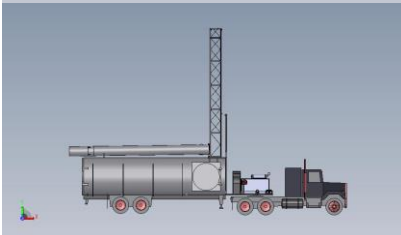
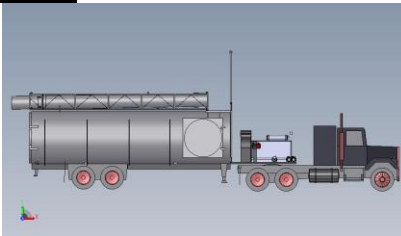
# Mobile Combustor



Combustor in transport configuration

- All necessary resources contained on the trailer (diesel generator, blower )
- 30' by 8' diameter outside dimensions of incinerator
- 30' smoke stack gets smoke up off the ground, healthwise safer than a burn pit
- Easily transportable as only a three step setup process
- Both overfire and underfire air for better combustion
- Simple control panel to help regulate temperature and air

## Setup



### Step 1

- Manually raise the stack support frames and lifting arm

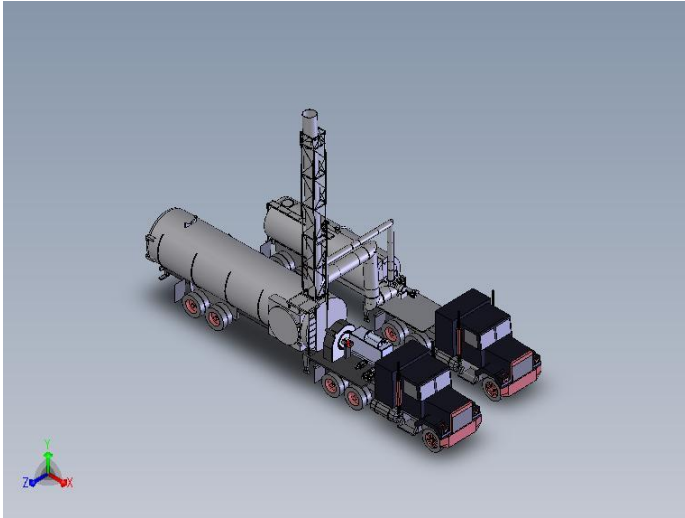
### Step 2

- Attached winch system looped over lifting arm raises the stacks support frame
- Pinned or bolted in upright position

### Step 3

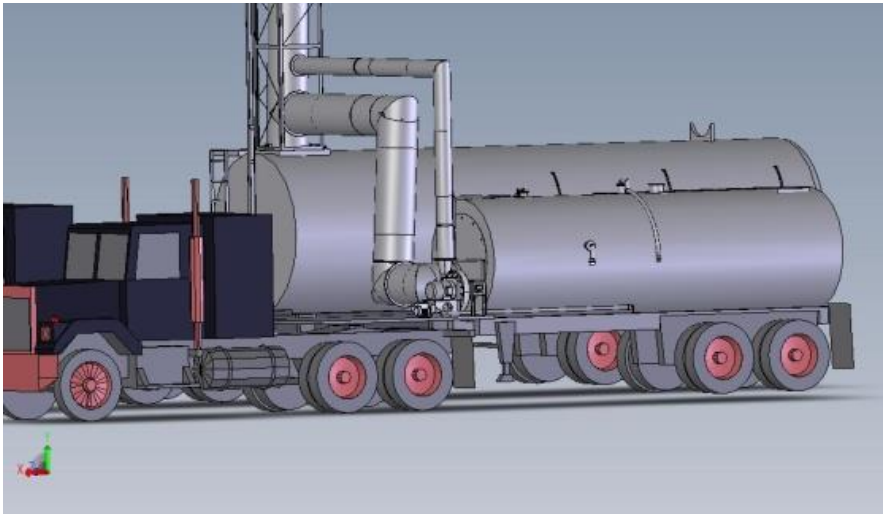
- Uses separate attached winch system looped over the stacks support frame to raise the stack
- Pinned or bolted in upright position
- Support Frame is kept in place to support the stack as it heats up

# Boiler Truck



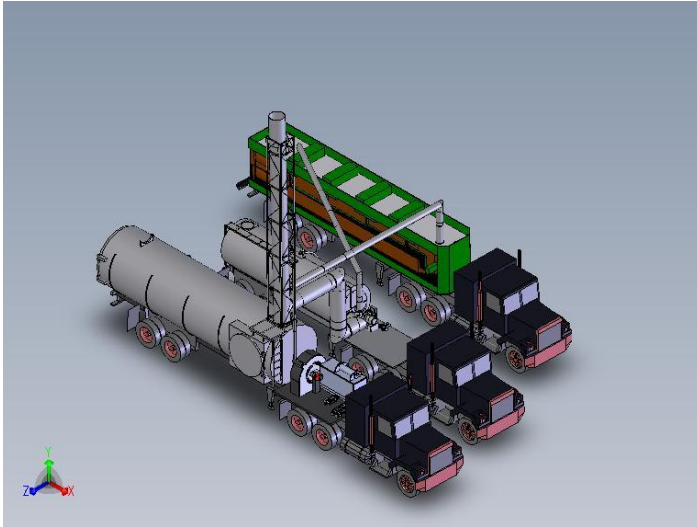
- Moderate pressure / 15 psi
- Water temperature of 160 – 200 degrees Fahrenheit
- Boiler would provide hot water for showers, cleaning, cooking, etc.
- Uses the upper part of the combustor stack to eliminate setup of another stack
- Induced draft fan to pull the gasses through the boiler and back into the stack
- Induced draft fans powered by diesel generator on the combustor truck
- Provide steam later for possible steam turbine generator

## Setup



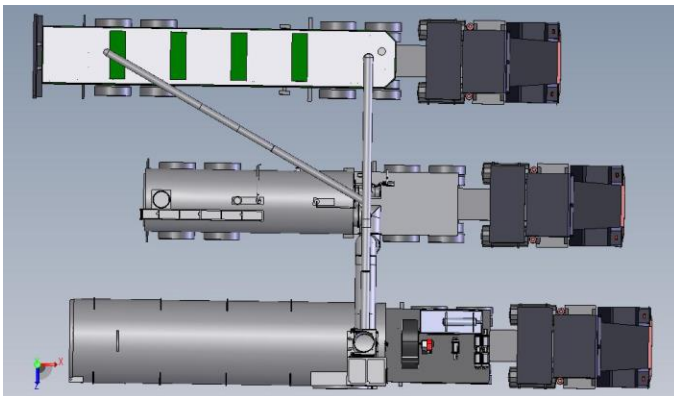
- Attachment of the incoming hot gas pipe from combustor
- Attachment of the outgoing cooled gas pipe back to combustor stack
- Hookup of power to the diesel generator on the combustor truck

# Electrostatic Precipitator Truck



- Electrostatic precipitator hooked up if length of stay and energy availability allow
- Would provide air pollution control for the whole system
- Installed Boiler provides cooling to protect the precipitator
- Uses combustor stack to eliminate the need to assemble another stack
- Power provided by diesel generator on combustor truck (Electrostatic Precipitators require little electricity, unlike baghouses)

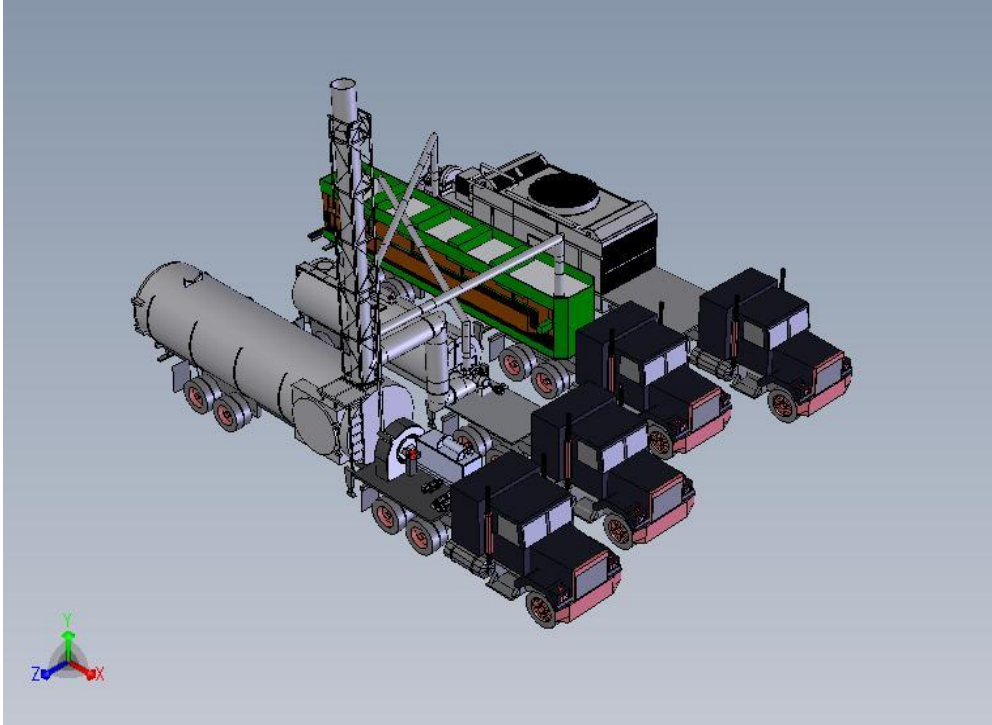
## Setup



- Attachment of cooled gas pipe from boiler to precipitator
- Attachment of cleaned air pipe from precipitator back to combustor stack

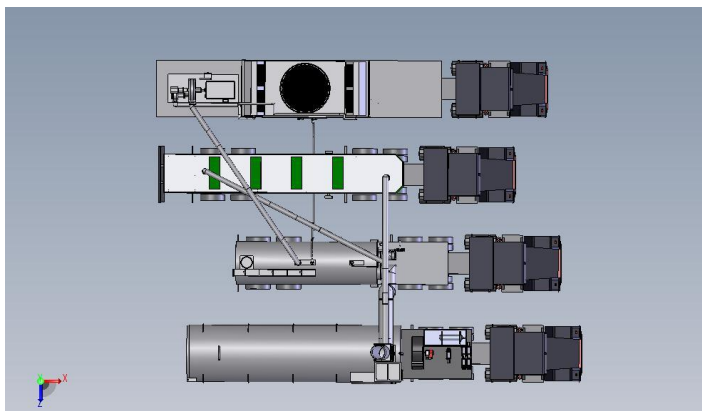


# Turbine Generator and Cooling Tower Truck



- Turbine generator and cooling “tower” added if length of stay in field warrants
- Provide power for this whole incineration system and perhaps for other electric needs
- Cooling tower condenses clean water for return to the boiler

## Setup



- Steam line from boiler to generator
- Water line from the cooling tower back to the boiler