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ATON
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TECHNOLOGY FOR THE DISPOSAL OF M6 PROPELLANT WASTE

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The ATON-HT SA co has developed technology to neutralize, and utilize hazardous wastes.

This also includes military wastes such battlefield gases, as well as post production wastes from TNT for the company Nitro Chem.

The offered technology is based on the use of microwave energy, to gasify, or incinerate the wastes, combined with a special reactor (MOS) called the microwave oxidation system, to destroy any harmful gases.

The microwave reactors have been designed as the HR200 (or the 5000HR) and the MOS reactor.

The heat energy which is created during the process can be used to produce industrial steam, or creation of electricity using a ORC system.

The proposal below shows in a block diagram the process.

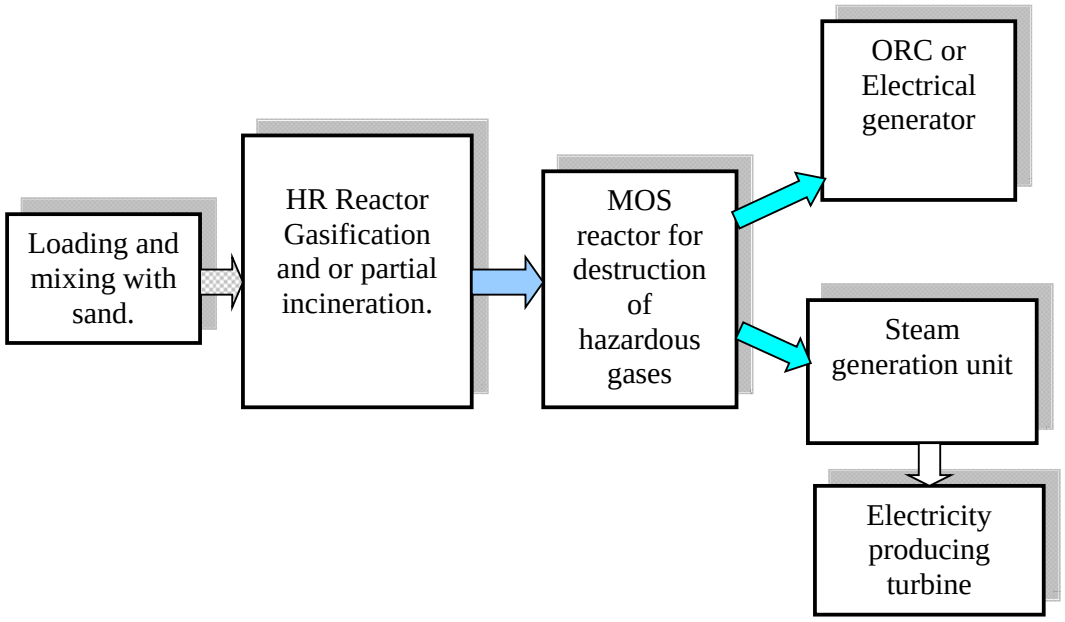

Fig. 1. Block diagram of the system

The first stage of the process is mixing the M6 high energy propellants with sand, which is used as a carrier to deliver the propellant to the reactor. The ratio of sand to propellant must be tested to establish the right ratio, depending the energetic values of the wastes.

The second stage: The thermal break up of the wastes under high temperature in a controlled atmosphere, usually in a environment with very little oxygen. This allows the controlled speed of the release of the energy, by regulating the gases in the reactor, as well as the ability to control the microwave energy heating the wastes.

Third stage: The gas created through the gasification process (and partial incineration) consisting mostly of nitrogen, CO, hydrogen, methane, and other carbon based gases) are directed by a hot cyclone which separates dust particles, to the MOS reactor, where it is further incinerated in a ceramic catalyzer heated by microwaves at a temperature of 1000 - 1100 degrees C.
As the gas stream leaves the MOS, it is a completely clean stream of hot air.

Fourth stage: For the utilization of the hot gases coming of the MOS, we propose two methods of using this energy. Using a ORC system with the hot gases, or converting them to steam and powering a steam turbine for electricity production. The electricity produced can be used by the reactor system itself, and excess sold locally.

Although the ATON company can offer two systems, the smaller 200 HR, due to the amount of waste, we will propose a 5000HR system. This can consist of one or two 5000HR reactors, and a block of MOS 200 reactor for cleaning of the gases. This would be a stationary installation built on site, allowing to treat from 3 to 6 tons of waste per hour.

The proposed system allows fulfilling all norms for clean air emissions, worker safety, and EPA standards. .A gas monitoring system can be installed for 24/7 monitoring.

The proposed procedure to execute the destruction of these wastes, will be based on tests in our lab reactor in Poland. If these test prove positive, we can build a larger unit in two containers (ATON 200HR) for further demonstrations' on site, which would then lead to building the large installation.

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It is worth noting here that the ATON 5000 HR reactor, after fulfilling its role with the M6 propellant, can be utilized commercially for the recycling of other wastes, such as ASR (auto salvage residue), PCB, infected soils, and other hazardous wastes.

Total cost of the treatment:

At this time predicting specific costs would be premature. However we feel confident that we can build, and execute the cleanup within the budget available.

As all companies bidding will have to scale up their technologies to dispose of the wastes, I feel ATON will be competitive in price, and time to execute.

One of our great benefits is the infrastructure built, can serve many other waste clean up efforts in the area, also to include oil soaked sands.

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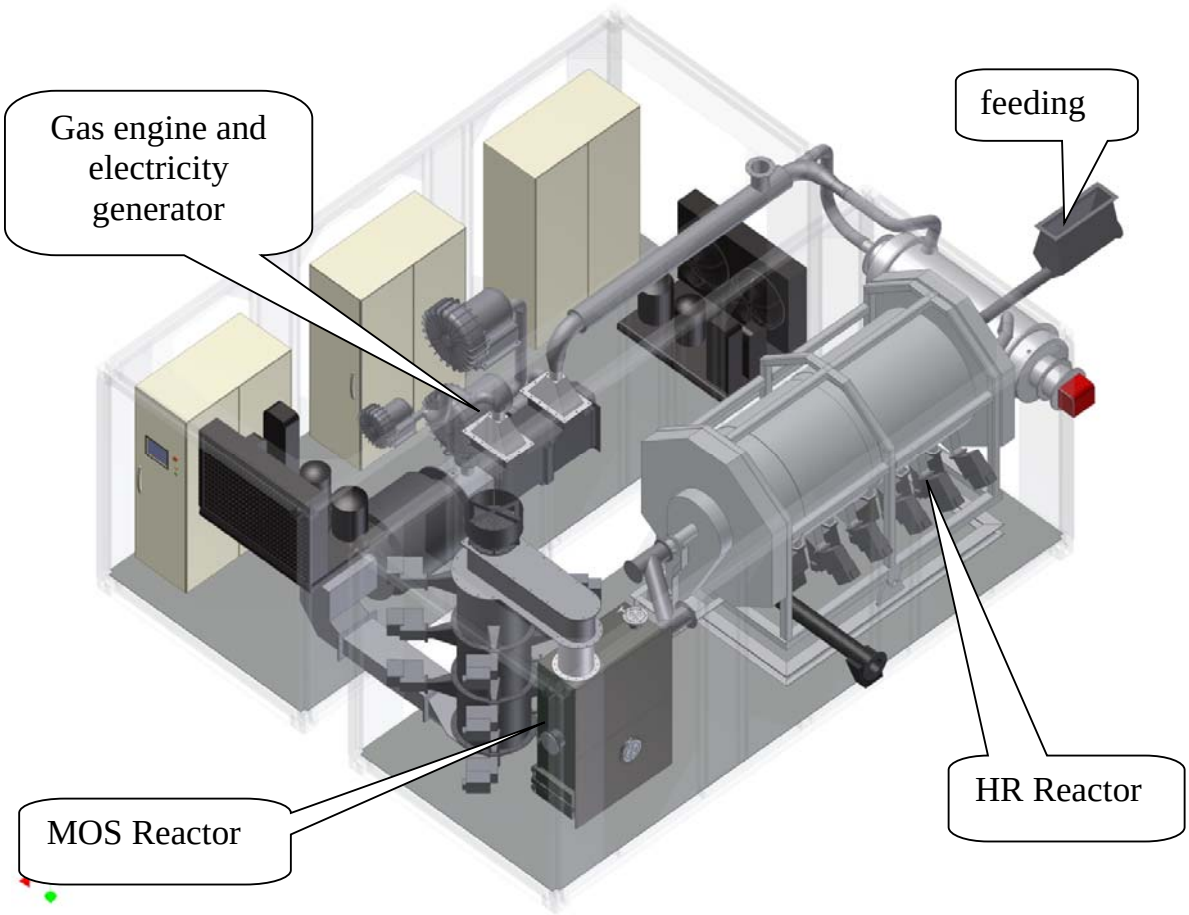

Fig.2. Complete system with HR 200 and MOS reactors.

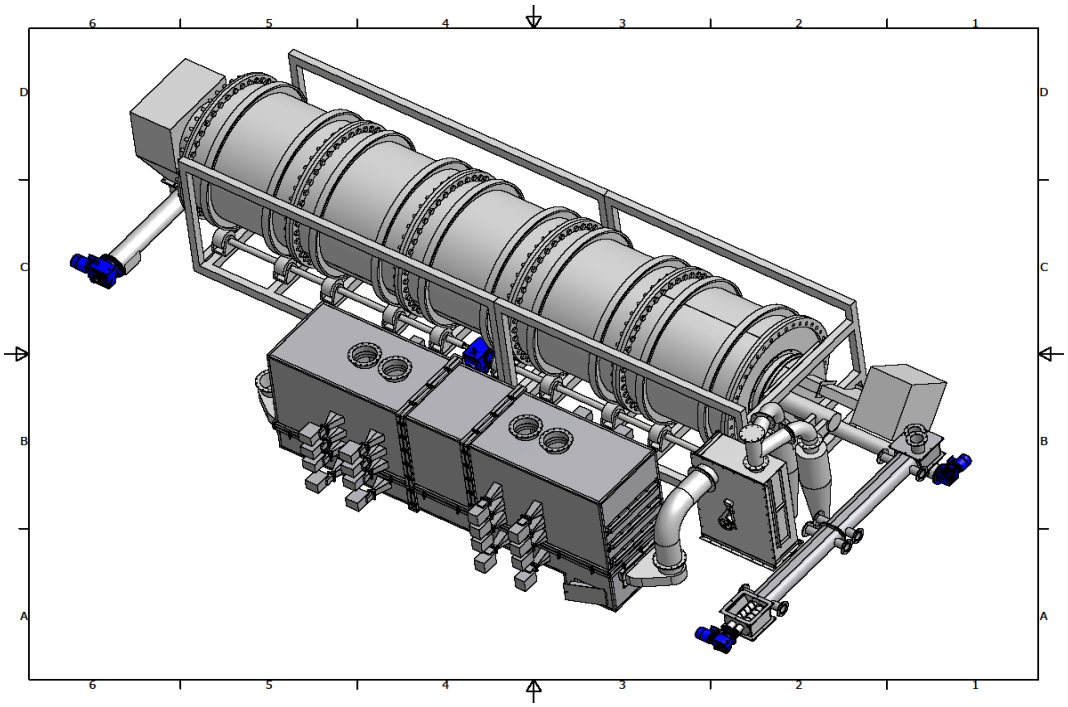

Fig.3. HR 5000 and block of MOS reactors.

Fig. 4. Block of MOS reactors

Fig.5. Photo of HR 200 reactor.

Fig. 6. ORC system for electricity generation