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**1. Installation.**

**What activities will be carried out at the site.**

Ctec energy plans to build an advanced gasification system at Newhaven port to dispose of non-hazardous medical waste provided by an established local clinical waste services company. The Facility will be built and maintained by Ctec energy, a private company founded in 2010 to pioneer a ground breaking renewable-energy application to capture waste heat energy from exhausts to generate electricity and thermal energy and the systems will be managed and operate under the name of Medi power ltd. The combustion plant will utilise an efficient and advanced steam turbine technology to generate significant electrical and thermal energy for initial consumption within the Newhaven port facility (Enterprise Zone).

The proposal is for the installation of a medical waste combustion plant combusting 500Kg per hour of non hazardous medical waste and generating 1.4 mW / hour of thermal energy and 250 kW / hour of electrical energy. The energy produced both electrical and thermal from the system is enough to supply close to 1,600 homes with heat or hot water and 360 homes with electricity. The initial plan is for the electricity to be supplied to the Port and the thermal energy to be used by local port companies using network heating with plans to extend the use to new and existing local housing and businesses in the future.

The combustion plant will be operating within 12 months of permit granted.

The CTEC system is an effective, efficient and environmentally friendly power generation technology. The Combustion system is solely designed and manufactured to work through individual stages of combustion, from gasification, partial combustion to total combustion and to burn high and low levels of plastic and biomass efficiently, with ultra clean emissions. The systems can be specifically tuned for varying types of medical waste. The exhaust heat is recovered through a patented CTEC compact heat exchanger generating super heated steam to be then forwarded to a specifically designed steam turbine which in turn drives an alternator to generate electricity. Steam exhaust provides additional thermal energy. The whole system is controlled automatically via a PLC.

Non-hazardous medical waste will be delivered to site on Lorries carrying a 35 cubic yard compactor bin on a daily basis, there will be 1 delivery per day of non hazardous flock waste and on Mondays and Thursdays only there will be a second delivery of nappies carried in a 50 cubic yard open topped hook lift skip, the waste will be mechanically tipped directly into a tipping toploader hopper/conveyer system which will feed the system continuously; the waste will be conveyed to a sealed shredder before going into the combustion chamber.

## **2. Operation.**

The system is designed to run constantly 24/7 and will have 11 operational staff operating a three shift system.

## **3. Staff training.**

Ctec is an accredited BS EN ISO 9001 company and operates a comprehensive management system to cover all aspects of its operations.

All operational staff will be fully trained on how to operate and run the system and on health and safety procedures, Environmental management policy's and operational procedures, they will be fully up to date on all aspects of the company and its processes & procedures.

## **4. Gasification and combustion.**

### **Ctec Heat recovery system**

The entire system consists of three main sections,

(1) Gasifier (2) condensing chamber / Heat exchanger) (3) Power unit).

- 1) The Gasifier where waste is loaded and ash is removed.
- 2) The Heat exchanger / condensing` system - which produces the superheated steam and cools the steam converting it back to water.
- 3) The Power unit – housing the turbine, induction motor and a sophisticated control system.

There are three main circuits - Water/steam, water cooling, Oil.

The CTEC steam generator is positioned at the end of the gasification incinerator and is connected to the hot gas exhaust, the gas flow is controlled through the Ctec system.

The steam generator itself has four cores and one water supply, water is fed from a tank via a pump to the cores, when the exhaust gases are directed through the CTEC steam generator, water is pumped to the cores and is turned into super heated steam, when the steam has reach the correct temperature it is pushed to the turbine and the system starts, the turbine is connected to an induction motor and produces electricity, when the steam has passed through the turbine it

continues its journey to the condenser where it is turned back into water and returned to the tank for the cycle to start again.

## **5. Ash handling.**

The gasification process will create approximately one ton of Incinerator bottom ash (IBA) per day, the ash will be conveyed automatically from the gasifier to a sealed 7 ton skip, the ash will be analysed during testing by CSG waste specialists to enable it to be classified and will then be picked up for recycling or disposal and replaced with an empty one.

All ash will be tracked and reported.

## **6. APC waste**

Contaminated Lime and carbon will require analysing and disposing of accordingly, all APC waste will be collected by CSG waste specialists for processing and for disposal or recycling.

All APC waste will be tracked and reported.