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Dr. Mark Rands,
The Royal Society of Edinburgh,
22-26 George Street,
Edinburgh EH2 2PQ.
Dear Dr. Rands,

**The Scotland's Energy Supply Inquiry.**

In connection with the above I would like to make the Inquiry Committee aware of a new renewable Energy Technology devised here in Scotland of which they be unaware. Being connected with the Hydrocarbons Industry for some years and also being an Innovator of some standing, it was my considered opinion that we required to look in a completely new direction for energy production. Oil, gas, coal and nuclear sources produce dangerous gases or residues, wave and wind power are generally intermittent and environmentally problematical. I then devised the "Scota Generator Technology" © presently patent pending, initially some considered that what I had devised could not work because it did not conform to accepted theories, this has now changed.

The "Scota Generator" © is a self contained unit which uses recycling natural forces such as gravity, pressure differential, vacuum, kinetic and other energies in combination to produce rotation and thereby generate power. The technology in operation uses no fuel, leaves no residue, runs 24/7 without attention, the apparatus is preferably buried in the ground so minimizing visible environmental effect, can be operated as individual units or in groups. It has the capability of being operated in very high or very low temperatures using Glycol or Inhibitors, this enables the apparatus to provide power to the national grid or a remote facility in the Sahara or in the Arctic. I would be obliged if you would make the Inquiry Committee aware that there are home grown alternatives such as this for production of renewable energy.

A condensed description and operating sequence of the patent application number 0427054.2 is attached which hopefully you may find interesting, to provide a comfort factor that I have some innovating ability I have also enclosed my C.V.

Yours faithfully
John S Cruickshank

# THE SCOTA GENERATOR.

**Description.**

The Scota Generator® consists of three main assemblies, the outer case, the inner case and drive shaft, the outer and inner cases are lengths of well casing blanked off with the inner casing sitting inside the outer casing by means of welded supports at the upper and lower areas. With the inner casing assembled in to the outer casing we have a reservoir at the bottom and an annulus, within the inner casing there are bearings supporting a shaft. At the upper end of the inner case there are ports which allow access from the annulus into the inner case, these ports can be adjusted by means of a port ring which can be rotated to open or close the ports. On the shaft which runs down the centre of the inner case are supports and bearings, one or more turbine rotors, and a pump mechanism at the lower end which operates into non return valves. At the upper end is a clutch-gearbox assembly with manual rotation capability attached to a generator, this enables the shaft assembly to be rotated and disconnected from the generator for setting and adjusting purposes.
Over the top of the inner and outer cases is a two piece lid which can be removed to allow removal of the complete inner case assembly for maintenance or repair, this when locked down in position seals the annulus from the inner case, there are small non return pressure relief valves in each lid section.
(In certain circumstances it may be desired to increase the vacuum in the annulus, this can be achieved by a solar cell powered feeding a battery and then a vacuum pump; it is considered that under normal running circumstances this should not be required).

**How it Works and Starting Procedure.**

The Generator works by a unique liquid circulation system using two closed end tubulars one inside the other, the liquid is transferred through non return valves in the base of the inner tubular into the annulus formed between the tubes. The liquid being trapped rises in the annulus and exits into the inner tube via a set of controlled ports, the liquid level in the annuius is kept above the ports level. Above the liquid level in the annulus a part vacuum is present and maintained by sectioned sealed lids covering the annulus, in these are non-return valves which allowed the air pressure exit when the annulus was filled up with liquid. The liquid flowing out through the ports into the inner tubular is guided into jets to a turbine which rotates a central shaft; at the lower end of the shaft is a pumping mechanism which moves the liquid in the inner tubular through two non return valves into the annulus. At the upper end of the shaft are a Clutch, Gearbox and power Generator, the pressure of liquid coming through the jets rotates the turbine, shaft and pump mechanism.
The liquid circulation is down through the bottom end pump, through the non return valves, up the annulus, through the ports down into the jets to rotate the turbine and down to the pump again.

**Starting**

Liquid with an inhibitor is poured into the inner case via a loading entry, the port ring is **closed,** operate the **clutch** disconnecting the generator begin clockwise **rotation** of the shaft using the hand wheel.
Shaft rotation will now begin the bottom end pump **pumping** liquid through the non return valves, the liquid rises in the annulus past the closed ports **compressing** the air in the annulus. The annulus air pressure is relieved by the top non return valves, allow the liquid to rise in the annulus until it just appears through the upper non return valves, open the ports slowly keeping rotating the shaft, fully release the clutch when the liquid begins to rotate the turbine blades at speed.. An indicator illustrates when the liquid level is suitably above the ports producing the partial vacuum, but allowing the liquid flow to operate the turbine and shaft etc. The vacuum in the annulus and weight of liquid in the inner tubular produce a pressure differential which assists the operation of the pump and liquid flow through the non return valves.