PHYSICS OF VORTEX ENGINE

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Abstract- An idea of creation of an engine that produces steady thrust & antigravity with ionic (plasma shield) across the structure of the aircraft. Mercury being an indifferent metal occurring at liquid state with high amount of surface tension produces ionic electric force that creates a force of thrust along with the gyroscope which is attached in the system that rotates at very high rpm creating an antigravity or negative gravitational force to make an aircraft to lift up. The fuel used in the engine is a liquid air which can be refuelled within the atmosphere itself by forcing the air in the tube section and compressing them by compressor of high compression ratio for obtaining liquid air and further sent to the reservoir from which it will be supplied to the engine chamber. Mercury generates enormous amount of electricity due to vortex motion in it. The combustion of liquid air and heating of mercury will occur by a OCU (Optical Control Unit) system where the sunlight (Ultra – violet) will fall to the OCU unit to a particular angle and heating the fuel upto its SIT (self-ignition temperature)and producing ionic thrust.
Usage of this engine is a huge benefit for travelling up to extremely longer distance and speed without getting the structure damaged as structure will be protected by an ionic shield around it in such a way that if a particle tries to penetrate it, the particle or the object will be destroyed and it will protect the aircraft.
The amount of thrust produced by this engine will be enormously higher than the ordinary gas turbine engine. This engine will bring a great revolution in the field of propulsion sciences and will create a new era of space transportation that will benefit the entire universe and will change the current scenario of propulsion unit.

I. INTRODUCTION

The concept of a vortex engine or atmospheric vortex engine (AVE), independently proposed by Norman Louat and Louis M. Michaud, aims to replace large physical chimneys with a vortex of air created by a shorter, less-expensive structure.

(Atmospheric vortex using smoke as the tracer)

II. VORTEX TECHNLOGY

The electromagnetic field coil, which consists of the closed circuit exchanger / condenser coil circuit containing the liquid metal mercury and / or its hot vapor, is placed with its core axis vertical to the craft.
A ring conductor (directional gyro-armature) is placed around the field coil (heat exchanger) windings so that the core of the vertical heat exchanger coils protrudes through the center of the ring conductor.
When the electromagnet (heat exchanger coils) is energized, the ring conductor is instantly shot into the air, taking the craft as a complete unit along with it.

If the current is controlled by a computerized resistance, (rheostat), the ring conductor armature and craft can be made to hover or float in the Earth's atmosphere.
The electromagnet hums and the armature ring (or torus) becomes quite hot. In fact, if the electrical current is high enough, the ring will glow dull red or rust orange with heat.

The phenomenon (outward sign of a working law of nature) is brought about by an induced current effect identical with an ordinary transformer.
As the repulsion between the electromagnet and the ring conductor is mutual, one can imagine the craft being affected and responding to the repulsion phenomenon as a complete unit.
Lift or repulsion is generated because of close proximity of the field magnet to the ring conductor.

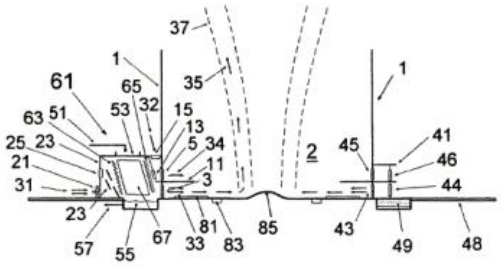
III. POWER GENERATION

1. Propellant tanks will be filled with liquid air (obtained directly from the atmosphere by onboard reduction equipment).
2. Liquid air may be injected into expansion chambers and heated by the metal working-fluid mercury confined in a boiler coupled to a heat exchanger.

3. The super-heated M.H.D. plasma (or air) will expand through propellant cooled nozzles.
4. The ship may recharge its propellant tanks with liquid air and condensate water collected directly from the upper atmosphere by the on-board reducing plant.

IV. OPERATION

In operation, the vortex centripetally expels heavier, colder external air (37), and therefore forms a large, low-pressure chimney of hot air (35). It uses about twenty percent of a power-plant's waste heat to drive its air motion. Depending on weather, a large station may create a virtual chimney from 200 m to 1 5 km high, efficiently venting waste power plant heat into colder upper atmosphere with minimal structure



(Elevation (side) view of an 80 m-wide (260 ft.) vortex engine.

It's constructed mostly of reinforced concrete)
The vortex is begun by briefly turning on a diffuse heater (83) and electrically driving the turbines (21) as fans. This moves mildly heated air into the vortex arena (2). The air must have only a mild temperature difference because large temperature differences increase mixing with cold ambient air and reduce efficiency. The heat might be from flue gases turbine exhaust or small natural gas heaters.

The air in the arena rises (35). This draws more air (33, 34) through directing louvers (3, 5), which cause a vortex to form (35). In the early stages, external airflow (31) is restricted as little as possible by opening external louvers (25). Most of the heat energy is at first used to start the vortex.

In the next stage of start-up, the heater (83) may be turned off and the turbines (21) bypassed by louvers (25). At this time, low-temperature heat from an external power-plant drives the updraft and vortex via a conventional crossway cooling tower (61).

As the air leaves the louvers (3, 5) more rapidly, the vortex increases in speed. The air's momentum causes centrifugal forces on the air in the vortex, which reduce pressure in the vortex, narrowing it further. Narrowing further increases the vortex speed as conservation of momentum causes it to spin faster. The speed of spin is set by the speed of the air leaving louvers (33, 34) and the width of the arena (2). A wider arena and faster louver speed cause a faster, tighter vortex.

Heated air (33, 34) from the crossway cooling tower (61) enters the concrete vortex arena (2) via two rings of directing louvers (3, 5, height exaggerated for clarity) and rises (35).

The upper ring of louvers (5) seals the low-pressure end of the vortex with a thick, relatively high speed air-curtain (34). This substantially increases the pressure difference between the base of the vortex (33) and the outside air (31). In turn, this increases the efficiency of the power turbines (21).

The lower ring of louvers (3) conveys large masses of air (33) almost directly into the low pressure end of the vortex. The lower ring of louvers (3) is crucial to get high mass flows because air from them (33) spins more slowly, and thus has lower centripetal forces and a higher pressure at the vortex.

Air-driven turbines (21) in constrictions at the inlet of the cooling tower (61) drive electric motor-generators. The generators begin to function only in the last stages of start-up, as strong pressure differential forms between the bases of the vortex arena (33) and the outside air (31). At this time, the bypass louvers (25) are closed.

The wall (1) and bump (85) retain the base of the vortex (35) in ambient winds by shielding the low-velocity air-motion (33) in the base of the arena, and smoothing turbulent airflow. The height of the wall (1) must be five to thirty times the height of the louvers (3, 5) to retain the vortex in normal wind conditions. To manage safety and wear of the arena (2), the planned maximum speed of the vortex base (33) is near 3 m/s (1 0 ft/s). The resulting vortex should resemble a large, slow dust-devil of water-mist more than a violent tornado. In uninhabited areas, faster speeds might be permitted so the vortex can survive in faster ambient winds.
Most of the unnamed numbered items are a system of internal louvers and water pumps to manage air velocities and heating as the engine starts.

V. APPLICATION

1. The heat is provided by a large area of ground heated by the sun and covered by a transparent surface that traps hot air, in the manner of a greenhouse. A vortex is created by deflecting vanes set at an angle relative to the tangent of the outer radius of the solar collector
2. The air flow through the louvers at the base will drive low-speed air turbines generating twenty percent additional electric power

from the heat normally wasted by conventional power plants.

3. The vortex engine's proposed main application is as a "bottoming cycle" for large power plants that need cooling towers
4. To provide a less-expensive alternative to a physical solar updraft tower. In this application, the heat is provided by a large area of ground heated by the sun and covered by a transparent surface that traps hot air, in the manner of a greenhouse. A vortex is created by deflecting vanes set at an angle relative to the tangent of the outer radius of the solar collector

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