An Assured Path to Energy Independence

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ABSTRACT

An amazing engine was invented over 40 years ago by a man named Joseph Papp. The engine had no cooling system, no exhaust and was fueled by a mixture of inert gasses sealed into its cylinders. Papp was secretive and never recorded or revealed information necessary to operating the engine. Efforts to restore the engine to operational status have taken a giant step forward recently. The principle investigators have demonstrated conclusively that large bursts of energy can be induced from inert gasses. Theory to support this phenomenon is deduced from verified experimental data.

When the term nuclear energy is mentioned as one of several alternate energy sources it refers to electric power obtained from heat produced in the fission of heavy elements. These power plants are an outgrowth of the WW II development of the atom bomb. We have considerable knowledge of the conditions necessary for extracting nuclear energy from heavy elements. The development of the H-bomb also revealed secrets of converting hydrogen to helium, similar to the process by which the sun provides the energy necessary for our existence. In all of these cases extremely high temperatures are involved. Conventional wisdom is that neither fission nor fusion can be accomplished without extreme conditions. It will be shown that a well known experiment argues otherwise. First we examine the tangled saga of an engine that once extracted nuclear energy from chemically inert gasses and the giant step achieved in restoring the engine to operational status.

The late Eugene Mallove, founding editor of the magazine *Infinite Energy,* devoted an entire issue (Vol. 9, Issue 51, 2003) to the engine invented by Joseph Papp. For those readers not familiar with the subject some pertinent items from this issue have been summarized.

The original version was a modified Volvo engine. In 1968 the famous physicist Richard Feynman attended a demonstration of the engine at which he and Papp had a confrontation. After the power to the control system had been disconnected Papp reconnected it and the engine exploded, killing one person. Dr. Mallove interviewed an eyewitness to the event, printing that and a letter later written by Feynman. The two accounts do not agree even concerning who disconnected the control system. Feynman announced that the engine was a hoax and there is little doubt that his opinion was widely accepted. In Feynman's defense, had there been any measuring of power output in the demonstration he would have known this was something entirely new.

In 1983 Papp engaged experts to measure the power output of a newer version of the engine and provide him with a sworn affidavit stating their results. The engine produced 107

horsepower over 66 minutes. There was no exhaust, no fuel added and no excessive heating. The dynamometer used was provided by Mr. Dennis Hodges, owner of Independent Diesel Service and an expert on internal combustion engines. The other witness was Dr. George Nolan, a chemistry professor at Northeastern University in Oklahoma. No chemical process could provide this much power and no electric motor with this power could run off a standard wall socket. Nuclear power is the only explanation that fits the facts.

Reference 1 includes an investigation of the atomic weights of the inert gasses to see if they were potential sources of the energy. Several possible cases were found. An atom of helium and an atom of argon combined have the same numbers of protons, neutrons and electrons as an atom of calcium. However, the combined mass of helium and an argon atom exceeds that of a calcium atom. If fusion of helium and argon can be accomplished the excess mass would be converted to energy. The same applies if two atoms of argon are combined into one atom of krypton. Energy is also available from the fission process. An atom of xenon has the same components as an atom of krypton and one of argon but more mass. Other possibilities exist and all of the cases investigated. 107 horsepower for 66 minutes would require only a few cubic centimeters of gas. If a fusion reaction is the source there would be a *decrease* in the volume of gasses in the cylinders, hence nothing to vent. Fission would produce a slight increase insignificant over the 66 minutes operation. A theoretical explanation of how these reactions could occur without generation of heat will be provided later but first a look at the new experimental results.

The new version of the Papp engine was constructed by Mr. Bob Rohner and his brother Tom; they also conducted dynamometer test that verified the 100 horsepower output. After many attempts to revive the Papp engine over the years, they built a single cylinder mock-up to investigate the parameters necessary to extract energy from inert gasses. Recently they have succeeded in obtaining large bursts of energy from a mixture of inert gasses. Repeated bursts from

the initial charge of gasses in the cylinder demonstrate that each explosion consumes only a small fraction of the contents, consistent with a nuclear source.

These results settle the main issue of where the energy comes from and provide confidence that remaining problems will be solved. For the skeptics who believe that high temperatures are necessary to initiate either fission or fusion counter arguments are advanced.

Quantum mechanics is currently thought by many to render much of classical physics obsolete because of discoveries that appear to contradict classical concepts. It is more accurate to conclude that three theoretical concepts are all in effect at all times and places but one or more may predominate in different scenarios. The three are quantum theory, classical theory and mass/energy equivalence.

The phenomenon known as the Compton Effect has been considered as a quantum effect outside of the realm of classical effects. Compton's discovery was much more profound than just an example of quantum mechanics. It dispelled the notion of incompatibility of the three theoretical concepts *and proved conclusively that a correct analysis of interactions between radiation and solid objects requires the necessary contributions of all three concepts.* The Compton equation required inputs from each of three theories which could not be supplied by the others. Its success testifies to their compatibility.

Reference 2 provides a detailed analysis of the Compton Effect when photons are reflected 180 degrees. Incident 0.711 Angstrom photons (the wavelength employed by Compton) have an inherent mass/energy of 17,438 Mev (million electron volts). The reflected photon has a mass/energy of 16,324 Mev. The difference, 1,114 Mev, is added to the reflecting electron's mass. These numbers are derived from the Compton equation, which is:

$$\lambda - \lambda_o = h/mc\ (1 - \cos\theta)$$

Where λ and λ_o are the wavelengths of the reflected and incident photons, respectively; h is Planck's constant; m is the mass of the reflecting electron; c is the speed of light and θ is the reflected angle between the incident and reflected photons. Note that the Compton Effect features a direct transfer of mass/energy from a photon to an electron. In all of the cases examined in Reference 1 there are no excess rapidly moving neutrons or protons to generate heat; there are only photons delivering their mass/energy and momentum to a solid piston.

Much of quantum mechanics deals with probabilities of different end results without consideration of details of a transition. This has led many physicists to conclude that what happens during the time period required for the Compton collision to occur is irrelevant. The fact that quantum theory is silent on the details of the interaction in no way justifies ignoring information from other sources. The Compton Effect does not involve quantum probabilities; it only utilizes the quantum dictates that radiation occurs in packets with specific energy and momentum proportional to its frequency.

In the Compton equation the ratio h/mc defines a wavelength of 0.0242 Angstroms and is called the Compton wavelength. It is a constant that provides the difference in wavelength between an incident and a reflected wave as a function of the angle over which the wave was deflected. It is valid only when an electron with negligible kinetic energy is the target of the photon. There is nothing in the equation and neither any reason nor evidence that the Compton effect applies only for some range of wavelengths. Compton confirmed his predicted results at several angles but in all cases displayed peaks at the same wavelength as the incident waves. Compton viewed the modified wavelengths as quantum theory predictions and said the unchanged wavelengths were in accord with classical theory. His modified waves were reflected from comparatively free electrons near the surface of the graphite target. Reflection from one gram of the graphite target would replace the electron mass in the Compton equation with one gram and

cause a wavelength change of about 10^{-27} Angstroms, completely undetectable. Similarly, visual light with wavelengths of several thousand Angstroms would find a Compton shift in the noise level.

The Compton Effect is totally consistent with the concept that photons are composed of identical sub-quanta and that these sub-quanta are the actual material that accounts for relativistic mass increase. When a photon collides with a solid body target such as an electron the target recedes, automatically causing the photon to lengthen as it recedes from the target. The increased wavelength photon must have less energy and momentum, which means it must have transferred some of its inherent mass to the target. Here is where the relativistic consideration is needed. It determines the mass transfer necessary to preserve conservation laws and to allocate the acquired energy between increased mass and increased velocity.

The Compton Effect shows that radiated energy can be converted directly into kinetic energy without the heating effect of fast moving neutrons, alpha particles and other particles. Complete conversion of the photon's energy, however, requires repeated reflections of the photon, as occurs in a cylinder with a moveable piston.

A .711 Angstrom photon yields 6.4 % of its energy and nearly double is momentum in a collision with an electron at rest. Each subsequent collision would yield less energy and momentum. There is no single equation for calculating the number of reflections for a photon to expend all its energy and momentum. This would vary widely, depending upon the photon's wavelength and the target's mass. During the power stroke of the Papp engine, a photon could make about 100 million round trips between a piston and the opposite wall of the cylinder. This apparently transfers a majority of the mass/energy of the photons involved.

The Papp engine has two distinct advantages over other nuclear energy sources: the size of its energy package and the fact that it yields pure mechanical energy. A 107 horsepower engine is

just right for an automobile and could be ganged together for trucks, busses and trains. It could supply the average household's electrical needs, decreasing the need for fragile transmission lines and power grids. It could desalinize water and transport it cheaply to where it is needed.

Once the principles of the Papp engine are better understood many other possibilities open up. The periodic table of the elements is full of candidates.

REFERECES

1. **Claybourne, J.P. 2004, "Possible Sources of Energy in Joseph Papp's Engine", *Infinite Energy*, 9,54,444-45**
2. **Claybourne, J.P., 2008, " A Possible Link Between Electrical and Gravitational Forces", 13,78, 34-37**