EXPLAINING THE "PULSING-THRUST" TECHNIQUE

Call or Fax: (703) [illegible]

ABSTRACT

The speaker has developed a new process that can substantially improve the performance of engines and motors; which he dubbed: "pulsing-thrust." The pulsing-thrust advantage is NOT obtained by simply pulsing the thrust on-and-off, as was supposed by some experts. It was specifically noted that there is correlation between the proposed thrust-doublers and the successful voltage-doublers. In the latter, the electric force is clamped and rectified to achieve the doubling effect. These steps involve the intentional and controlled accumulation, storage and release of the available 100% energy by the action of diodes and capacitors. Diodes and capacitors have equivalents in Mechanical Engineering.

Can mechanical forces be clamped and rectified, and how?

The sudden and continual application of a constant pressure produces dynamic overshoot effects beyond the steady-state values. The overshoot, which usually damps out quickly, is the "clamping" step; and it can be easily produced. "Rectification" can be achieved by noting the functional similarity of mechanical springs to electric capacitors. The speaker will show how the use of an elastic medium, such as a spring (to accumulate the overshoot effect), and a controlled nozzle opening (to store and then release the combustion product), can produce greater Pressure; and hence, greater Thrust and Specific Impulse for the same amount of propellant.

The technique opens the window to the available, but generally unused, 50% to 100% energy efficiency; and the process is applicable to engines and motors for Launch Vehicles, Spacecraft, Aircraft, Refineries, Utilities, Automobiles, etc.

In this talk, the speaker will (1) discuss the energy-overshoot-component, (2) describe the specific steps required to achieve the substantial pulsing-thrust advantage, and (3) show how the technique is compatible with the laws of thermodynamics and propulsion principles. Advanced techniques to achieve greater performance will also be introduced.

The talk can be tailored to different audiences, including, executives, engineers, scientists, technicians and others who are familiar with basic science and engineering principles.

The speaker:

Ali F. AbuTaha is a mechanical engineer who began his engineering career in 1962, and aerospace career in 1969. He has conducted extensive research of the dynamic overshoot effect and modern propulsion systems.

Time:

80 minutes, including 20 minutes for Q/A.

December 3, 1992

OPEN SEMINARS

PULSING-THRUST ADVANTAGE: 50% to 100% EFFICIENCY

ABSTRACT: The initial, sudden and continual application of a steady pressure, or force, produces dynamic overshoot effects that cause strain (and stress) overshoots beyond the steady-state values. Normally, the overshoot damps out quickly. In the ideal case, the overshoot strain energy is DOUBLE the steady-state strain energy. In the normal steady-state operation of rocket engines and motors, energy utilization has been limited to the 50% level, which corresponds to the 50% steady-state strain energy. Strain energy is work, and the unused portion (50% to 100%) of the available energy can be harnessed by using a specific technique; which the speaker dubbed: "pulsing-thrust."

The pulsing-thrust advantage is NOT achieved by simply PULSING engines or motors on-and-off, as has been supposed by some experts. The speaker had previously mentioned the analogy of the thrust-doubler to the successful voltage-doubler, in which the electric force is "clamped" and then "rectified" to achieve the doubling effect. These steps involve the intentional and controlled accumulation, storage and then release of the available 100% energy by the action of diodes and capacitors, in electronics. Mechanical clamping and rectification have not been used before, and the mechanical equivalent of "clamping" and "rectification" will be introduced.

Rather than store the strain energy in the walls of chamber pressures; hence, zero work; clamping and rectification can put the idle energy to work. The pulsing-thrust advantage (50% to 100%) is applicable to rocketry, aircraft, utilities, refineries, automobiles, etc.

In this talk, the speaker will (1) describe the specific steps required to achieve the substantial "pulsing-thrust" advantage, (2) discuss the energy-overshoot-component, and (3) show compatibility with the laws of thermodynamics, propulsion principles, etc.

The Seminar is aimed at engineers, scientists, managers and others who are familiar with basic science and engineering principles.

The speaker: Ali F. AbuTaha began his career in engineering in 1962, and in aerospace in 1969. He has conducted extensive research of the dynamic overshoot effect, and he is the author and lecturer of the Program, "Anatomy of Failure Mechanisms in Modern Systems."

Time: 90 minutes, including 20 minutes for Q/A.

To arrange a seminar, Call or Fax: (703) [redacted]

December 1992