FREE WORK VIA
SURPLUS FORCE DIFFERENTIAL IN HYDRAULICS

The subject invention provides a means to produce energy without producing any pollution. Man has publicly known the basic scientific components since 1874, via US patent 147,519, crediting Mr. Terence F. Reilley. The system is hydraulic.

Man benefits from hydraulic actuators in every day life, by applying pressurized fluid to one side of a hydraulic actuator, developing a force through the stroking range of the actuator's shaft, thus attaining work.
The actuator shaft is returned to the start point by removing the pressurized fluid from the one side of the actuator, plus one of two approaches:

(1) Pressurized fluid is applied to the actuator causing force in the opposite direction forcing the shaft back to the start point.

OR,

(2) A return spring is loaded while the shaft is driving and unloads, forcing the shaft back to its start point.

All hydraulic systems are designed based on a force (F1) applied in the direction of the desired work action, counter force (F2) in the opposite direction and frictional force (F3). The net force (F4) of any hydraulic actuator is F1 - F2 - F3 = F4.

Lets consider the relationship between the volume of pressurized fluid and the hydraulic actuator. Imagine a volume of fluid forced into an actuator producing one hundred pounds of force, through the actuator's stroking range. How much force would you have to apply to the shaft to push it back to the start point, if the fluid's supply pressure remained constant? Physical laws maintain that one hundred pounds of force (ignoring friction at this point) would only achieve equilibrium; however, one hundred and one pounds of constant force would push the shaft back to the start point.

What just happened? You displaced a volume of pressurized fluid identical to that required by the hydraulic actuator to produce its hundred pounds of force with your one hundred and one pounds of force**. With only 1% more force than the hydraulic actuator develops you can produce that actuator's required fluid supply.**

Are we getting to a point where a system could provide its own source of pressurized fluid if one actuator pushed fluid from another?

What do you think we need?

(1) Imagine that we have a hydraulic actuator that is 20% more efficient than conventional hydraulic actuators. This means the new actuator produces one hundred and twenty pounds of force through the same stroking range of the shaft, rather than the one hundred pounds attained by the conventional actuator in the first consideration.

(2) Imagine that the new, more efficient hydraulic actuator could relieve you of the burden suffered in pushing with one hundred and one pounds of force to displace the volume of pressurized fluid in the previous example.

(3) Imagine that the more efficient actuator actually required less fluid than the conventional actuator attaining identical stroke.

If we had these three points what can be accomplished?

If we had all three points we could develop a machine that provides its own source of pressurized fluid while stroking through its shaft's range. Part of the 20% surplus force, created by the 20% greater efficiency, would be required over coming friction, causing motion and resetting the machine for the next reciprocating cycle. **Here's the kicker! The remaining surplus force, through the stroking range, can be extracted from the system producing work external to the system.**

Well…, Reilley in 1874 (US patent #147,519), Powers in 1886 (US patent #345,446), Sleeper in 1901 (US patent # 696,768) and Strain in 2004 (US patent #6,782,800 and European patent #1240435) were all granted patents defining actuators achieving exactly these three points.

NET RESULT = SURPLUS WORK = SURPLUS ENERGY!