Water motors : Vaporization engines

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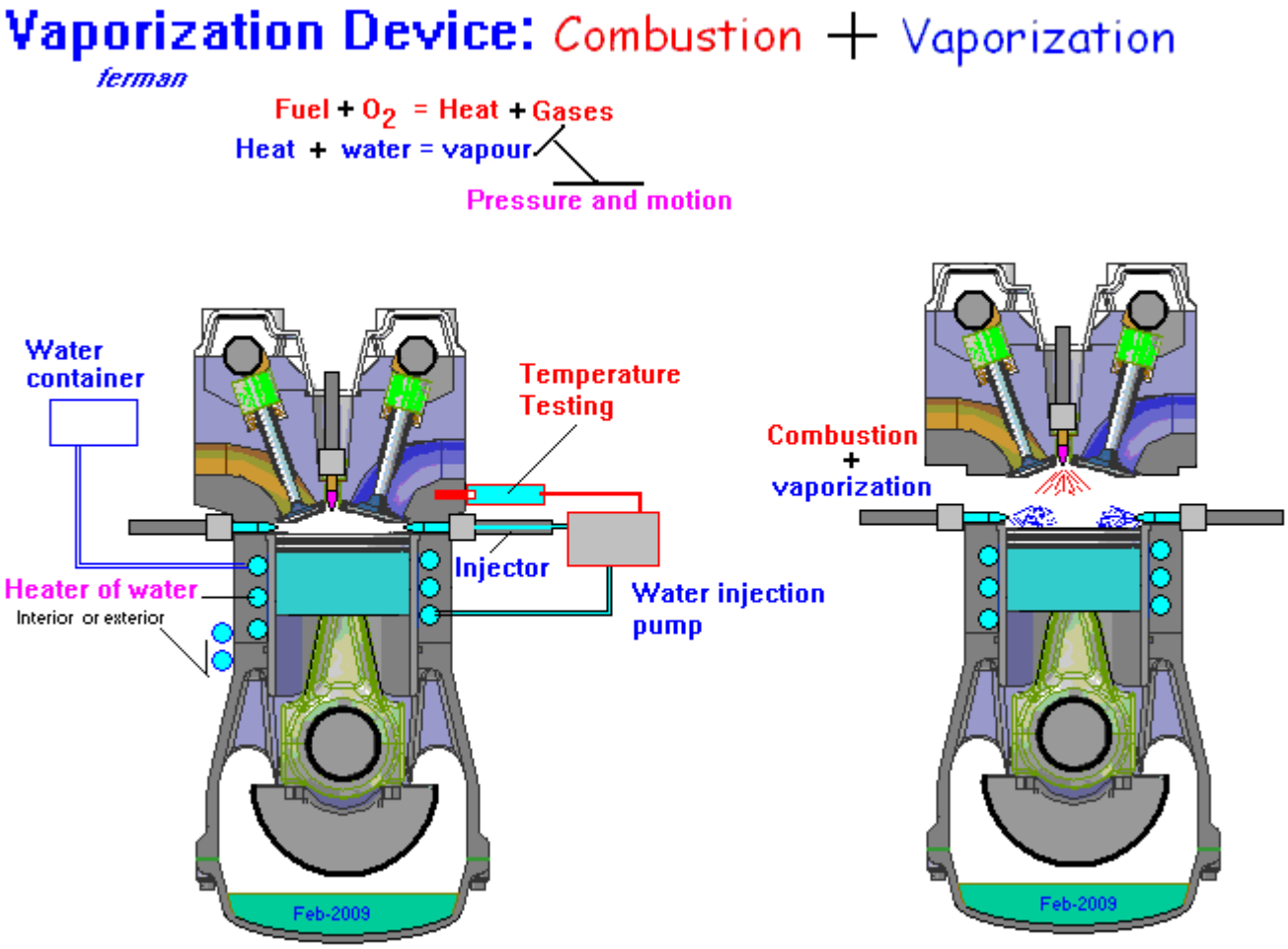


The water vapour as element of motion impulse

The vapour of water is an element of action and motion in many machines, motors, turbines, etc. since the pressure of the water vapour can provide us the necessary movement for many types of vehicles.
This way if we look at the combustion or explosion engines, the produced movement takes place as consequence of the expansion and pressure of the resulting gases of the combustion, mainly the water in form of vapour and the CO2.
However, and in the combustion and explosion motors, a wrong use of the energy is made at the moment since most of this energy gets lost in form of heat, for which it is necessary to adapt important refrigeration systems.
And these systems of refrigeration what make literally is to misspend and waste the energy that could be used to produce more vapour of water and more potential of motion.

Motors of vaporization

The idea and intention of this invention is the use of the surplus energy or heat that takes place in combustion engines, which currently is dissipated by refrigeration systems.
This surplus energy can be used to produce water vapour that can favour and to increase the push potential on the pistons motor.

Elimination of the current refrigeration systems

Logically if we use the whole surplus energy appropriately in the combustion motors, then the refrigeration systems (that at the moment are used to eliminate that energy) are not necessary. That is to say, the motors of vaporization don't need of refrigeration systems.

Operation of the devices of vaporization

As we know, in engines the combustion or explosion is carried out in the combustion chamber to where the fuel and air are taken by means of conductions, valves and injectors with the appropriate coordination to the motor phases.
Let us remember,
Admission: Where the valve of admission of air opens up and the cylinder is filled.
Compression: Where the valves are closed and the air (or the mixture of air-gasoline) is compressed.
Explosion or combustion: Where the spark takes place for the explosion; or the injection of fuel for the combustion.
Escape: Where the escape valve opens up and the gases of the cylinder are expelled to the exterior, to begin a new cycle.

System of vaporization

But next to this previous process, the system of vaporization introduces a new device of injection of water in the appropriate places so that the high existent temperatures in the moment of the explosion can vaporize great quantity of this water, which provides a supplementary push to the pistons.
At the same time the heat absorbed by this vaporization makes to get a suitable balance of temperature for the operation of the motor without necessity of refrigeration systems.

Operation

The watering o injection of water on the combustion chamber should starts when the motor is hot and the injection has to be regulated by mean of the temperature of the motor in such a way that in turn, the same injection of water can regulate the adequate temperature for the motor work.
So the vaporization in a feedback circuit consists, where the temperature of the engine manages the injection of water, and at the same time, the vaporization inside the water manages the temperature of the engine.
This way, we alone have to predetermine and adjust the ideal temperature of working.

If the temperature ascends --- the injection increase.
If the temperature descends ---the injection decrease or is cut.

As the vaporization of water capture energy, then the surplus heat that is produced by the combustion can be used in this vaporization and the motor temperature can be maintained in the adequate level without necessity of refrigeration systems.
So, when more heat in the motor, more injection and more vapour to impel the pistons.

Elements of the system of vaporization

The main elements to highlight would be:

1.- A injection pump that is commanded in phases of injection by the system of distribution of the motor and commanded in injection flow by the valve of temperature (3).
This pump would inject water (previously heated when passing next to the motor block), with object of obtain the maximum yield of the energy of vaporization that takes place in the combustion.
The injection like we said, it will be made strategically for not impeding a good combustion of the fuels but to facilitate the compression of the mixture favouring this combustion.

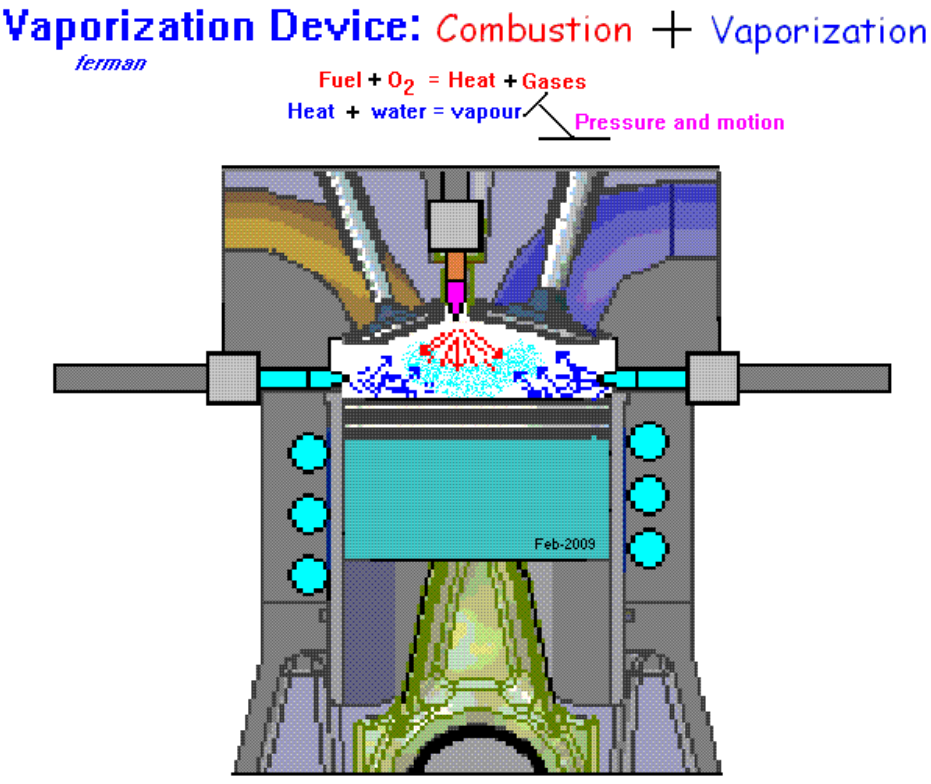
2.- One or more injectors for cylinder to introduce the water in the appropriate phase.

3.- Like we have said, and to manage the flow or load of the injection pump, we need of a valve of temperature that takes charge of regulating the quantity or flow of injection to the cylinders, according to this temperature.
This valve of temperature will be connected with the injection pump for regulating it in its flow.

4.- Of course, we will need of a container or deposit of water that it should be distilled or to be rain water for not damage or dirty the cylinders.

5.- And lastly some conductions of water from the deposit until the injection pump that pass next (or inwardly) the motor to be heated before being injected.

Injection strategy:



The injection of water in the combustion chamber should be in powdered or atomized form and directed strategically against the opposed side to the injection of fuel or spark plug (for example, against the pistons or similar place) with object of not impairing the combustion but just the opposite, so that the evaporation of the water increases the compression of gases on the injection of combustible and this way to favour the combustion or explosion of the same ones. (See drawing)
This way the combustion is favoured, and later, the energy exchange among the combustion gases and the water can produce its vaporization.
As I have said, the injected water should be previously heated with object of getting the maximum possible yield of the motor.

Consideration of parameters

Keeping in mind that we use the reaction heat in the combustion of gasoline or fuel (47 kj/g) for the evaporation of water and that this heat is very big regarding to the one of evaporation of the water (2,23 kj/g), because we have a wide margin for the injection of water (1 -- 20) with which we can substitute the fuel in great proportion.
This way, supposing we lost the 50% of heat in escape gases or radiation in the engine, we also have other 50% to use in the evaporation of the water.
For example, supposing that we have an engine that spends 10 litres of fuel per 100 kilometres, then the relation of consumption of fuel and water would be similar to:

1 litre of fuel per 9 litres of water

Looking to the future

Keeping in mind the low consumption of these motors of vaporization, we can consider that the problem of combustibles can be resolved with the use of biomasses, future chemistry of the cellulose*, etc.

* We can promote a natural cycle of the cellulose using it finally in the motor of combustion, for which we alone need to learn how to use it in the combustion motors.
On the other hand the electricity can be gotten without necessity of using fuel by means of photoelectric, eolic systems, etc.
Therefore with the correct use of the natural product we will be been able to obtain in the future the enough energy for our necessities.

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In the following drawing different motors of vaporization are exposed:

- Of combustion (Otto)
- And the rotary engine that I exposed in 2005

This last one with two different applications: One as combustion motor and another as motor of Hydrogen-oxygen or another similar combustion.

Vaporization Engines : Combustion + Vaporization

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Fuel + O_2 = Heat + Gases

Heat + water = vapour

Pressure and motion

Vaporization engines use the combustion energy to produce propulsion vapour