Non-rocket, non-reactive quantum engine: idea, technology, results, prospects

Vladimir S. Leonov, **Oleg D. Baklanov**, **Mikhail V. Sautin**, **Georgy V. Kostin, Alexander A. Kubasov**, **Sergey E. Altunin, Oleg M. Kulakovsky**.
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Vladimir S. Leonov, PhD., Professor, Supervisor and chief designer of the GK "Quanton", Moscow, Russia, v.s.leon@mail.ru.
Oleg D. Baklanov, PhD., Advisor to RSC "Energia", Moscow, Russia.
Mikhail V. Sautin, Lieutenant General retired, Moscow, Russia.
Georgy V. Kostin, PhD., Dr. Sci. (Tech), Professor, Voronezh, Russia.
Alexander A. Kubasov, Tester of Space Technology, RSC "Energia", Korolev, Russia.
Sergey E. Altunin, Engineer, Technical Director, GK "Quanton", Bryansk.
Oleg M. Kulakovsky, Engineer, General Director, GK "Quanton", St. Petersburg, Russia.

Annotation: The control tests of the two prototypes of non-jet propulsion of quantum engine KvD-1-2009 (model of 2009) with horizontal thrust and antigravitator KvD-1 with vertical thrust, were conducted on March 3rd, 2018 by a public commission of specialists chaired and initiated by the former Minister of General Machine-Building Industry of the USSR (space branch) Oleg D. Baklanov. KvD-1-2009 developed a specific thrust of more than 100 N/kW, which is more than 100 times more efficient than the liquid rocket engine (LRE).

Keywords: jet propulsion, non-jet propulsion, quantum engine, antigravity, quantum gravity, theory of Superunification, LRE, specific thrust force.

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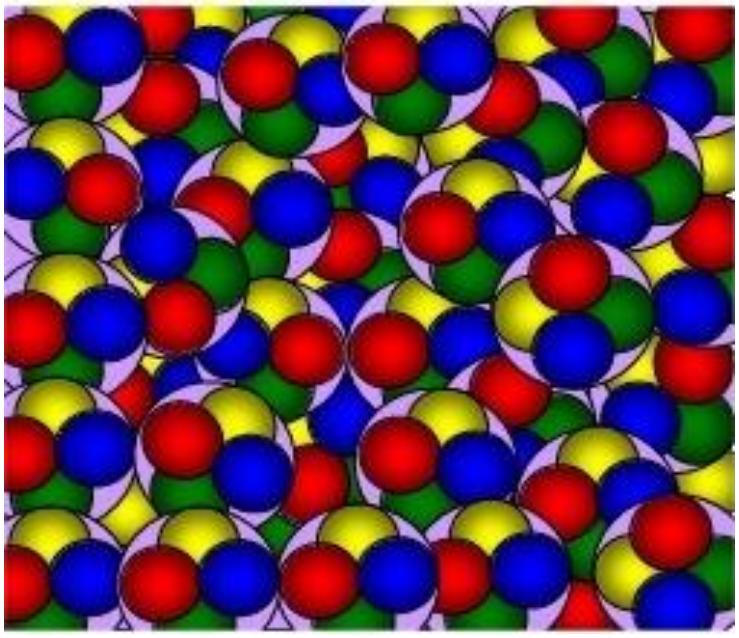

Fig. 1. Quantized structure of vacuum space.

Until recently, jet method of propulsion which fundamentally relies on Newton's physics, remained the only way to move in space, requiring use of the rockets. “For me, a rocket is merely a way, only a method of penetrating into the depths of space, but by no means a goal in itself… Will there be a different way to travel the cosmos – I shall accept it too...” wrote K.E. Tsiolkovsky, the founder of Russian cosmonautics [1].

The principle of a non-reactive quantum engine (QE) is based on the quantized quantum vacuum space structure (Fig. 1). This vacuum structure is used by the QE to push off from, thus creating a new non-reactive thrust force in accordance with the fundamental Theory of Superunification [2].

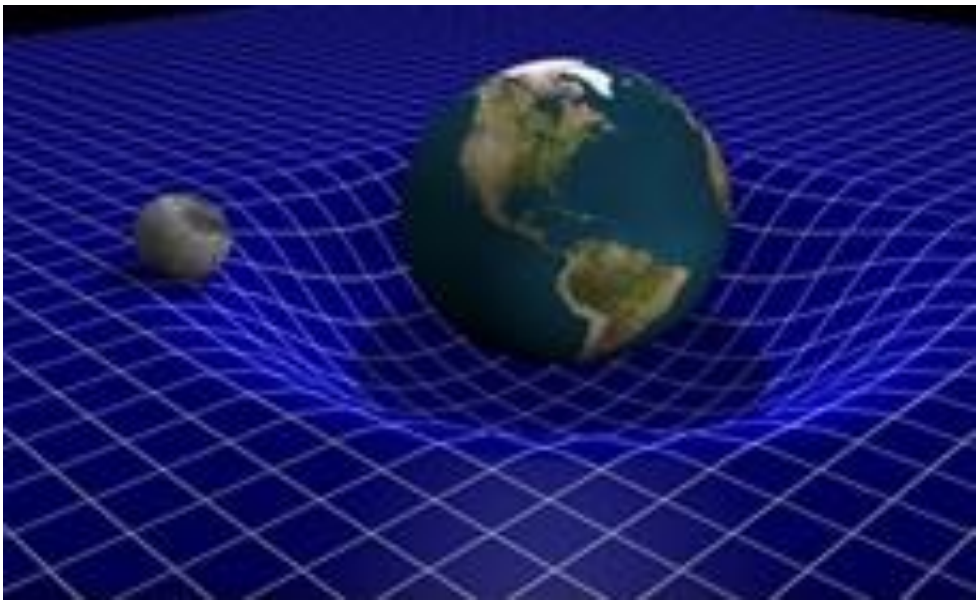

Fig. 2. Deformation (curvature according to Einstein) of the grid of the SEI field by the mass of the Earth

As a quantum of space-time, quanton is the carrier of superstrong electromagnetic interaction (SEI), which can be represented in the form of a power elastic energy grid penetrating the entire Universe. Theory of the quantum gravity considers gravity forces as originating from deformation (curvature according to Einstein) of the force grid of the SEI field (Fig. 2), creating a gradient of energy in the form of the gravity force $\mathbf{F}_T$:

$$\mathbf{F}_T = \text{grad}W \qquad (1)$$

Formula (1) underlies the operation of a non-reactive quantum engine. Fig. 3 shows the cross section of a quantum engine with a conical working body made of ferrodielectric, on which a system of intersecting inhomogeneous electric **E** and magnetic **H** fields is imposed, producing an energy gradient in the direction of the axis of rotation of the cone (1) (RF patent №2185526) [3].

Fig. 4 shows the **EmDrive** quantum engine by English engineer **Roger Scheuer**, in which the energy gradient and the thrust force $\mathbf{F}_T$ are produced inside the microwave cone resonator. A general view of an **EmDrive** engine is shown in Fig. 5. A mechanism

of the thrust force production in the **EmDrive** cone is not explained neither by engineer **Scheuer** himself nor by his followers [4].

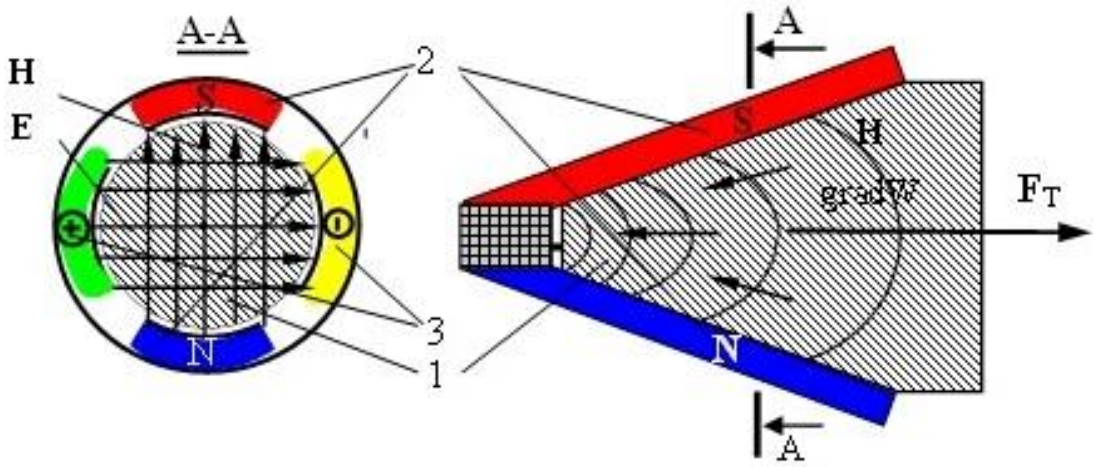

Fig. 3. Quantum engine with a conical working body.
1, 2 - magnetic system, 3 - electrical system

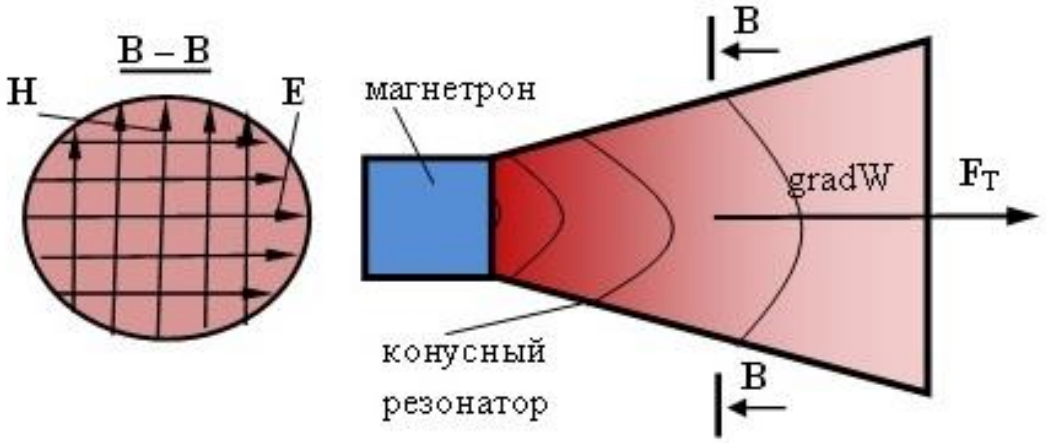

Fig. 4. Production of the gradient of energy W and $\mathbf{F}_T$ thrust force inside a conical microwave resonator

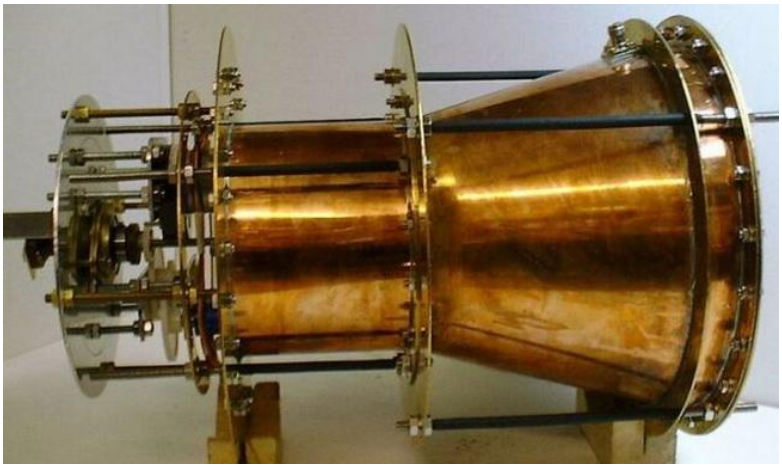

Fig. 5. A general view of a microwave **EmDrive** engine

A similar principle underlies the work of a quantum warp engine which is being developed at NASA [5]. In China, the quantum engine was tested in orbit [6]. The Russian Academy of Sciences on its website made a statement that the quantum engine does not contradict the laws of physics [7].

In addition to conical type, to date we have considered several ways to produce a non-reactive thrust force with various working bodies of a quantum engine [8].

The efficiency of a non-reactive quantum engine is characterized by the specific thrust force F_y, which is the ratio of the force $\mathbf{F}_T$ of the engine thrust in newtons (N) on the stand to the electrical power W consumed by the engine in kilowatts (kW):

$$F_y = 1000 \frac{F_T}{W} \left[\frac{N}{kW} \right] \quad (2)$$

Fig. 6. Participants of the tests of the QE model KVD-1-2009 with horizontal and vertical thrust on March 3rd, 2018. The chairman of the commission, **O.D. Baklanov**, is in the center, **M.V. Sautin** is on the right, **V.S. Leonov**, **A.A. Kubasov**, and other members of the commission are on the left.

Subjected for testing were two products:

1. Wheel chassis with a pulsed QE of the model KVD-1-2009 sample of 2009. On the general photo (Fig. 6) this device is presented in the center of the foreground;

2. Antigravitator with QE inside with vertical thrust. In the photo (Fig. 6), the stand with the antigravitator is located on the right in the foreground.

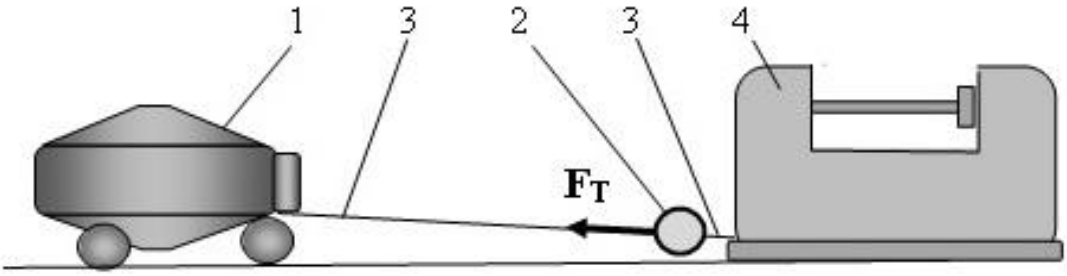

Рис. 7. Scheme of the measurement of the thrust force $\mathbf{F}_T$ of QE model KVD-1-2009
1 – chassis with KVD-1-2009, 2 – dynamometer, 3 – ridgepoles, 4 – rest

Measurements of the pulse mode thrust force $\mathbf{F_T}$ (Fig. 7) was measured by a mechanical dynamometer DPU-0.5-2 with a scale of 500 kg of force. Deflection of the arrow was recorded using a digital movie camera. The dynamometer had to be held by hands in order to avoid lateral vibrations (Fig. 8).

The pulse thrust force measurement included more than **20 repetitions** with results ranging from 110 to 500 kgf. For greater reliability, the measurement sample was formed from 5 lowest results. The resulting average of the lowest pulse thrust force is determined to be 1390 N.

Fig. 8. Photo of the measurement showing magnitude of the pulse thrust force $\mathbf{F}_T$ of 450 kgf generated by KVD-1-2009

The power supply of KVD-1-2009 is a three-phase AC network of 220/380 V, 50 Hz. The maximum value of power consumption during the pulse is 12 kW. Testing results are summarized in Table 1:

Table 1.

Technical parameters of the QE model KVD-1-2009

Parameter	Value
1. Thrust force in the pulse mode	1390 N
2. Peak power consumption	12 kW
3. Specific thrust force	115 N/kW
4. Weight of the device	125 kg
5. Dimensions of the device: Length Width Height	 1600 mm 1400 mm 1050 mm

Compared to the KVD-1-2009 with the worst-case specific thrust force of 115 N / kW, the antigravitator with KVD inside with a vertical thrust showed even better results. For comparison, the best models of liquid-fuel rocket engines (LREs) have a specific thrust force not exceeding 0.7 N / kW (Table 2). Obtained from the formula (1), an expression that relates the specific thrust force $\mathbf{F_y}$ and the specific impulse I_y of the LRE is:

$$F_y = \frac{2000}{I_y} = \left[\frac{N}{kW}\right] \qquad (3)$$

Table 2.

Specific force F_y for a number of domestic LREs

LRE engine type	Specific thrust, F_y, N/kW	Specific impulse, I_m, sec	Specific impulse, I_y, m/sec	Thrust, F_T ton
РД180 vacuum at the Earth	 0,604 0,655	 337,8 311,3	 3314 3054	 423,4 390,2
8Д411К	0,625	326,5	3200	60
11Д55	0,610	334,4	3280	30,4
14Д24	0,685	298	2920	27
РД0146	0,441	463	4537	10
11Д58М	0,580	352	3450	8,5
11Д58МФ	0,549	372	3646	5,0
8Д611	0,697	293	2871	3,15

As can be seen from table 2, the specific thrust force of the best domestic rocket engines with thrust ranging from 3.15 to 423.4 tons does not exceed 0.7 N / kW. This is 165 times less than the prototype of the KVD-1-2009, the specific thrust force of which was more than 115 N / kW. For comparison, in the EmDrive engine NASA received a

specific thrust of 1.2 mN / kW, 1000 times less than that of the KVD-1-2009. In the future, the QEs in the mode of energy recovery will reach the specific thrust forces of more than 1000 N / kW. This is 1,428 times higher than that of the LRE, which does not have such a development prospects. Another flaw of the LREs reflected in Table 2 is that raising the specific impulse of the LRE leads to the decrease of the specific thrust force.

Since the specific thrust force of the KVD-1-2009 exceeds that of LREs **more than 100 times**, in order to produce the same thrust force KVD-1-2009 needs to expend at least **100 times** less energy (or fuel) than LREs. From that we conclude that the future of space travel and transport belongs to quantum engines and other new generation technologies [9].

Key findings and recommendations:

1. A brief description of the idea and technology of a non-rocket non-reactive quantum engine by **V. S. Leonov**, developed in Russia in the Quanton Group of Companies, is given.

2. Control tests of a prototype non-reactive quantum engine of the type KVD-1-2009 are carried out by the public commission of specialists in 2018. The pulse thrust force, power consumption and specific thrust force were measured. The specific thrust force of KVD-1-2009 amounted to 115 N / kW (11.7 kgf / kW). The test report is published on the official website of the **Quanton Group of Companies** [10].

3. In comparison with the reactive LREs, the specific thrust force of which does not exceed 0.7 N / kW (0.07 kgf / kW) for the best domestic models, the specific thrust force produced by KVD-1-2009 being 115 N / kW (11.7 kgf / kW) shows that KVD is at least 100 times more energetically effective than LRE.

4. Such a sharp jump in the increase in the specific thrust force **by 100 times** and higher in QE compared to LRE is due to the rejection of the use of chemical fuel and its combustion processes to create jet thrust. When fuel is burned, the main amount of heat energy is uselessly thrown out through the LRE nozzle. In contrast, the quantum engine does not “heat” the atmosphere and space.

5. Quantum engine KVD-1-2009 creates an impulse of thrust force without ejection of reactive mass and without using chemical fuel. The power of a quantum engine is produced by electrical energy, eliminating the electrojet effect. The thrust vector of a quantum engine can vary in space in any direction.

6. The creation of a quantum engine became possible as a result of the development by **V.S. Leonov** of the fundamental theory of Superunification, which leads Russian science to world leaders. The working principle of a quantum engine is based on the quantum theory of gravity (CTG) in the framework of the theory of Superunification. According to CTG, the quantum engine realizes the effect of creating artificial gravity forces (antigravity effect) as a result of deformation (curvature by Einstein) of the quantized space-time inside the body of the quantum engine.

7. The high specific thrust force of a quantum engine affirms the prospects for its use in cosmic space.

8. NASA (USA), Great Britain, China and other countries are working towards the creation of quantum engines. At its orbital station, China has tested a small microwave EmDrive quantum engine with a 72 N thrust and is about to increase its thrust by 100 times. In Russia, when testing KVD-1-2009, the thrust force ranged from 110 to 500 kg (from 1100 to 5000 N).

9. Currently, Russia is a leader in the development of the theory and design of quantum engines. It is necessary to organize new research, testing (including that in independent certified laboratories) and the production of quantum engines in our country.

Interesting Facts:

1. A quantum engine can be conditionally classified as **non-reactive**, since the thrust force is produced as a result of the repulsion of the working parts of a quantum engine from the quantized space-time.

2. To creating the same thrust force as a liquid-fuel jet engine, a quantum engine will consume at least 100 times less energy.

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