

Space transporter.

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In recently in scientific ambience all are more often discussed question about peace use of cosmos in interest of the development of the Land and mankind. Also in connection with worry mankind by cosmos threat "cosmic stranger" - an asteroid and large meteorite, as well as comets and their splinter on agenda appeared several problems. The First is connected with mastering cosmic resource and comes from theory of the firm development society. In brief we shall state предысторию problems. In connection with growing crisis on planet Land, connected with:

- a contamination surrounding ambiances product to vital activity mankind - a main by part industrial departure and departure of energy;
- closing natural resource, mainly bound again with industry and energy;
- beginning influence created artificially person of energy on energy of the natural processes;
- a growth to need of the population of the planet in different sort resource (including energy) that will soon become the impossible within the framework of resource of the Land;

appeared the problem of searching for of alternative energy or alternative (the unearthly) resource, as well as removing bad departure with surfaces of the Land.

The ensemble different variant decisions of the problem of the removing bad departure Was offered to vital activity mankind - for instance such, as conclusion container (possible with nuclear waste) on around Terrestrial orbit with the following movement or on Sun or in deep cosmos. The Decision of the problem with energy need linked with transition on nucleus and particularly on thermonuclear energy. For the this moment while these hopes were not justified since nucleus energy in spite of all their own pluses turned out to be much "dirty" and than further, that оцрpee stands the question about salvaging nuclear waste. With thermonuclear energy more so nothing not clear since its in general hitherto no nor in what type.

The Main part of energy need of the inhabitants of the planet on former is provided "traditional" fossilized power system: coal, oil and gas. There is attempts to move to solar energy and this in principle is a good output from situation, but on modern research level this problem very expensive and that much more it is important, ecological very bad at production solar station on the Land.

So idea stand;bear ecological bad industry was brought forth after analysis all these factor and energy with surfaces of the Land in cosmos. For decision of the problem resource was is also offered idea to use the facility of cosmos, in particular facility different cosmic object (the asteroid, comets etc.) Even under the first attempt to visualize the changes to infrastructure, established on the Land, becomes absolutely clear scale of the necessary transformations, from technical-econmic before political, and capital investments.

This problem much much planned and consider in given work all moments not there is possibility. Here we shall consider only one problem of engineering, appearing at decision on a matter of the transportation cosmic object, being of interest with industrial standpoint.

The Second problem is connected with cosmic safety of the planet and in recently all more often rises in different circle - from purely scientific before cinematographic.

The Danger of the rapprochement large cosmic object with the Land known long ago - a planet keeps the silent certificate disastrous consequence such event in the manner of crater and crater on its surfaces. The Problem of protection of the Land from such object is discussed already not one decennial event, but decisions more more acceptable hitherto is not worked out. Most is often offered known scenario from "starry wars": when tracking station for around Terrestrial by outer spaces at the last moment or nearly at the last moment finds the dangerous object whereupon by means of ballistic rocket with surfaces of the Land to object is delivered nucleus warhead and by means of nucleus blast cosmic object "is destroyed". On most deal changes in bosom debris, in heap small splinter at the best, decent part from which will reach before surface of the Land and presents not much smaller threat than initial object. So appeared the idea not to destroy the cosmic object, but change the parameters of its motion so as he already did not present for the Land of no dangers.

As a whole after complex consideration and analysis enumerated above problems to manage to work out the initial concept and formulate the initial requirements to new class of the cosmic flying machines and accordingly motor installation for them. The Concept is concluded in creation and use for decision of the above-mentioned problems cosmic transporter with very powerful own energy on board, long time of the unceasing work, good maneuverability and reliable controllability. The Danger that or other cosmic object possible with it is enough high share to probability to forecast beforehand, shall say for several years and come to a conclusion about change of their orbit (rather than about their destruction) on the grounds of well thought-out and counted forecast of the further behaviour these object.

The Objects, presenting industrial interest, possible also define beforehand and count the parameters to optimum path their safe transportation on more close orbit to the Land for the further use.

So source parameter of the problem were given:

- a real mass of the cosmic object;
- a change to velocities of the cosmic object;
- a realtime of the transportation;
- a real mass транспортировщика;
- a possibility to make the most available in different area research has brushed against;
- minimization energy and specific expenseses.

The Mass of the cosmic object was originally expected 10^7 ton. That real corresponds to the large meteorite or small asteroid, or debris of the comet. Time of the transportation (change to velocities of the object) was fixed equal 10. Change to velocities of the cosmic object for given time was expected 10km/sec. The Restriction on mass and cost transporter is got from condition

of profitability of the transportation of the object on final orbit (in the event of technological use resource object).

The Mass of the cosmic object was chosen also with provision for profitability of its transportation (was expected that this iron-nickel meteorite). Was organized analysis to applicability of the different types DU, as real existing, so and that on which there is at least small has brushed against, for decision of the delivered problem. As a result done payment became clear that none of existing on given moment of the types DU can not solve set the problem on one or another reason.

Transportirovanie large object by mass of the order 10 million of tons what has shown the analysis possible only to account resource (the worker of the body) most object. At energy on runaway worker bodies in one or another degree is found on cosmic transporter. So itself cosmic transporter must have in its composition powerful source to energy, good converter to energy with high KPD transformations to powers.

As a result of analysis existing has brushed against, dug as a result of research development society, was moved a suggestion to use as energy source nucleus power installation on the basis gasophase reactor, as the most powerful, mastered and available at present.

The most efficient type converter to energy at present is the turbine ($\eta=38\%$). In contrast with the other types converter to energy, for instance thermo electric, thermo electronic, thermo emission though they and possess the small mass and size, the turbine possesses more high KPD and is the most perfecting and reliable.

The Transportation by installation on the basis EU with UF6. Energoustanovka presents itself design in composition which enter: gasophase nucleus reactor with worker by body UF6 (for base will take standard gasophase reactor: $T_{\text{раб}} = 637 \dots 1500\text{K}$, $W_{\text{эл}} = 7,5\text{MW}$) as far as possible sped; speeded up before 10MW; the steam turbine (the base - a standard turbine with TES); electro generator; the compressor; the refrigerator - radiating; the vaporizer - an electronic guns (the lazars). For the reason increasing of transportability, the reduction of the mass, increasing to reliability, simplicities fabrications and test, possibility block assemblies. As well as reducing the price of to account of the using the standard assemblies - a number of the installation is chosen not one, but several. Since material of the object (for instance comets), its density and mechanical characteristic exactly not known, is offered mechanically with her not to contact (about avoiding of its destruction). I.e. transporter mechanically at all are not bolted for comets, but have a helmsmen to engines, which and co-ordinate their location (ERD) that superimposes the certain requirements on managerial system.

The Sharp problem for given energoustanovka is an unset to surplus power (the heats) in surrounding outer space. Since KPD whole power installation small, that necessary to provide reliable tap of the heat useless part of heat that reactor does not became warm higher norms. In condition of the cosmic vacuum tap of the heat can be realized only only by radiations. The Traditional way unset of the heat radiation expects presence greater warmed surfaces, which in unit of time with units of the surfaces constantly radiate the stationary flow to energy.

Possible in the same way variant not stationary unset of the heat radiation. At the this moment has brushed against, accumulated on this type radiator very small so scientist and engineer necessary to do else considerable work in given direction.

Thereby considered in given article problem has very important applied importance. In spite of the fact that problem of the similar sort hitherto is not spared due attention on various reasons (from economic before political), importance and urgency them for mankind from this does not become less.