

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)

Small Launchers: Concepts and Operations (7)

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LIGHT LAUNCH VEHICLE FOR OPERATIVE LAUNCHES OF SPACECRAFTS INTO THE EARTH ORBIT

Abstract

The goals of creation of the light rocket vehicle with launching weight of 15 – 30 tons may be explained by wishes of many countries to get their own rocket vehicle without huge expenses and also by urgent necessity for launching in proper time of one mini- or micro satellite or a cluster, consisting of 5 – 10 nanosatellites by a lot of world commercial companies. As for specific cost of putting 1 kg of a payload into an orbit, the light rocket is not competitive with its heavy analogues. Its advantage lies in a general costs reduction and in high immediacy and responsiveness (readiness) of a satellite to be put into the space. The efficiency of using the light rocket vehicle will be determined by its workload, i.e. increasing of number of launches will cause decrease of their cost. The light rocket does not require high-expensive spaceport, and exclusive areas for falling stages will be minimized. Here is submitted a work about creation of light rocket vehicle on liquefied oxygen and kerosene for launching in the conditions of the Baikonur Cosmodrome. While launching there may be used existing ground support facility, and due to that, the cost of launching can be considerably lowered. There are applied component parts and liquid propellant rocket engine, which are produced in Ukraine. Initially the tendency of attracting to the project a small number of highly qualified technicians was introduced by German technicians, as it was both while creation of the German rocket Aggregate-4, and during execution of the pilot project of the American lunar rocket. And now, in the global conditions, it is necessary to minimize the scheme of creation of the light rocket project. The project may be executed in the conditions of rocket-space activity commercialization and in the conditions of efficient organization of its execution. For this purpose there have been attracted the possibilities of non-governmental Ukrainian company and foreign partners for collaboration.