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FUTURE IN THE PAST: INNOVATIVE LAUNCH VEHICLE TECHNOLOGIES

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Abstract

The XX-th century was created the perfect models of rockets, stages, engines... This hardware is able to solve the most difficult task, and it is a unique industrial base and have its adherents and contestants... Time has shown that not all mastered design and technology stand the test of time. Especially today, when the main task aerospace industry is to reduce cost, laboriousness and production time. This is applicable to both development schedule and production time of the rocket samples. The life cycle of technical solutions now can be infinitely long until the time comes to change the propulsion systems principles. The margin of scientific, technical and technological reserves today are almost exhausted. Only innovative way of development the new rockets can improve the situation. This paper presents some fresh ideas in transportation systems technologies aimed at cost and time related parameters of the technologies. Recently, innovative technical solutions are found or obtained, e.g. both the fairing design, and the airframe, and engines or nozzle orifices, and launch complexes outline, etc. The application of these solutions will in this situation not only catch opportunities which are lost during the crisis, but also to provide a real growth of launches in commercial sector, and in the sector of research and scientific missions, as well sector of the deep space exploration. If small rockets should not entertain much hope for improving the systems efficiency due application of innovation, the launch system for big telecom sats can show a unique growth potential, as well as the super-heavy rockets, where innovation will reveal fully dramatic effect. The paper also presents some fresh ideas for solid rockets technologies which still remains the last hope of significant part of world aerospace industry.