

SPACE PROPULSION SYMPOSIUM (C4)
Advanced and Combined Propulsion Systems (8)

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COMPETING EVOLUTION OF ENGINES, POWER INSTALLATIONS AND MOBILE STARTING
COMPLEXES UNDER SCENARIOS OF ATMOSPHERIC AND SPACE PROSPECTS

Abstract

Introduction. Researches are conducted under scenarios of space prospects. In a basis experience of interactions and results of workings out of leading experts from the various design and scientific organizations are used./1/ Scientific scenarios are a basis of the consolidated interactions between scientists, students and teachers./2/ Scenarios of prospects: All atmospheric and the space is broken into zones of strategic interests. In atmospheric zone combined air jet engines are used. Winged vehicles of commercial, scientific and emergency reaction are analyzed. Vehicles of emergency reaction are launched from space and mobile launching platforms. Mobile launching platforms are the vehicles in the form of a disk (the "Thermoplan" "Lokomoskajner") like "Ekranolet". For economizing of fuel vehicles with thermal memory are analyzed. Diving operations from space, the subsequent flight in a ricochet mode are carried out. In zone of sphere of action of the Earth electro rocket engines to 50kw will be able to use. Key multi-purpose solar nuclear vehicle is provided. It will provide package transportation of various freights, distribution, service and technological updating of satellite systems. Vehicles of the various combined configurations like beam and umbellate are analyzed. In zones of exploration of planets of solar system powerful plasma engines 100-300kw will be able to use. On near-the-planet sites it is supposed to develop scientifically research stations. Winged vehicles with thermal memory will be able and to work in other atmospheres of Mars, Venus, Jupiter, Saturn. Start from near-the-planet bases - stations is carried out. Conclusion. System of crossed graphic priorities will be able to operate using different aerospace and space vehicles. Borders of preferable use of various types of electro rocket and powerful plasma engines are established. As alternative priority possibilities of Nuclear Rocket Engines in the combined execution are revealed. Higher requirements to creation of engines. For reduction of time of flight the competing expediency of a combination of electrorocket and chemical engines is proved. Expedient combinations of solar and nuclear installations are offered. Competing possibilities of the various combined air jet engines are shown. References: 1.H.W.Loeb and D.Feili - Germany. G.A.Popov, V.A.Obukhov, V.V.Balashov, A.I.Mogulkin, V.M.Murashko, A.N.Nesterenko, S.Khartov - Russia.. "Design of High-Power High-Specific Impulse RF-Ion Thruster". 32nd International Electric Propulsion Conference, Wiesbaden, Germany, September 11-15, 2011 2. Kurkin I.I., Merkov A. "Innovational Stages of Development of a Space and Architecture of the Combined Hybrid Propulsion Power Installations". Space Propulsion 2008. May 5-8, HERAKLION – Crete – Greece