

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Future Space Transportation Systems (4)

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THE CONCEPT OF THE DEVELOPMENT OF THE REUSABLE INTERORBITAL SPACE  
TRANSPORTATION SYSTEM FOR PROVIDING LUNAR AND INTERPLANETARY MISSIONS

**Abstract**

The transition from a theory to a practical use of reusable space transportation systems opens new horizons for the outer space exploitation for the benefit of mankind. At present the transport systems with a high degree of reusability at the stage of launching into low Earth orbit become real. This need for space transportation obviously does not end there. This report is devoted to the concept of the reusable interorbital space transport system development by Yuzhnoye SDO. The system is designed to provide cargo and passenger transportation between the inner planets of the Solar System. Advantages of this system include: the separation of freight and passenger flows, to ensure maximum safety of people and maximum efficiency of cargo delivery; wide applying of reusable elements to reduce the cost of next deliveries; no need to equip the elements of the system with a heat-shielding coating, which allows to increase the payload mass. The evolution of the system from the initial stages of its creation to the following ones on which the increasing freight traffic is provided at high economic efficiency is described in report. The questions of sustainability and adaptability to new technologies of the system architecture are considered. For example: space manufacturing, new engine technologies, fuel mining outside of the Earth.