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DESIGN OF THE CREW CABIN OF A SUBORBITAL PLANE FOR 6 PASSENGERS BASED ON THE DESIGN FOR THE STUDENT AEROSPACE CHALLENGE COMPETITION

Abstract

The rapid development of sub-orbital vehicles accelerated the development of space tourism. Crossing the edge of the cosmos, looking at the Earth from this distance and experiencing microgravity are important aspects of childhood dreams of becoming an astronaut. The first space tourist, Denis Tito, paid 20 million dollars to fly to the ISS. 20 years later, the projects of commercial companies such as SpaceX, Virgin Galactic or Blue Origin meant that space tourism ceased to be a futuristic vision.

Developing a vehicle capable of making such a journey was a huge challenge. It is no less important to provide the passengers on board with appropriate conditions so that the journey is safe and comfortable for them. Two important issues stand in the way - the legal problems associated with sub-orbital flights, and the fact that space tourists are not intended to be trained astronauts. These and many other issues were taken into account in the design of the crew cabin of a sub-orbital plane for 6 passengers, designed for the Student Aerospace Challenge competition. In this paper we will present a project taking into account the legal aspects related to suborbital flights, the trajectory of such a flight and its impact on passengers, ergonomics of the cabin equipment, life support system, but also the In-Flight Entertainment system. The project won the main prize - ESA Grand Prix in the competition in 2019.

The paper will also present further prospects for the development of the project and the lessons learned from the work.