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Space Architecture: Exploration and Tourism (3)

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PROJECT ENTERPRISE INTERIOR

Abstract

The “Enterprise” is a suborbital space plane of the German-Swiss TALIS Enterprise group. By 2013, it is planned to carry up to six passengers or scientific payload up to a height of 125 km. A suborbital flight implies high acceleration forces and about five minutes of microgravity: these are extraordinary conditions, which affect the construction and the design of the space plane. The interior design needs to accommodate for ergonomic seats, being safe and comfortable in all flight phases, fulfilling the certification requirements and being of minimal weight and yet providing the design atmosphere of a futuristic venture. A free unobstructed movement in the microgravity phase as well as necessary restraints for body positioning and taking pictures are required. To fully enjoy the bright blue planet on one side and the dark starlit sky on the other side, a glare-free interior is required. One of the highest risks of such flights stays cabin depressurization and the fast effects on human physiology.

The proposed design reacts on these parameters in many ways. Monocoque carbon fibre seats allow an easy adjustment of the inclination and minimize edges and corners. Five point safety belts with one point locks allow for safe and fast fixing of the passenger. Special counterpressure suits as well as light helmets with integrated oxygen masks provide safety in case of a sudden cabin decompression in high altitude. The helmets include an electro-chromatic shading screen to accommodate for the high light contrasts and a head-up display, informing the passenger about the current flight path and environment conditions. It can also be used for augmented reality applications, showing the names of countries and cities the passenger is looking at as well as the names of stars seen in space. A helmet integrated stereoscopic camera allows ‘hands-free’ picture takings as well as the video recording of the whole flight from the passenger’s point of view.

The large windows are surrounded by a backlit, recessed handgrip, which allows passengers to restrain themselves during the microgravity phase and look out of the window.