

EXPERIMENTAL INVESTIGATIONS INTO PARACHUTE RESCUE SYSTEM FOR LIGHT GYROCOPTERS

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Abstract. Ballistic parachute systems are very common in ultra-light aviation because they allow to rescue the whole aircraft together with the crew on-board. As their reliability, carrying capacity and technological level are still growing so one can meet them even in the general aviation aircrafts. They significantly increase subjective feeling of the crews of safety level in aviation sport, and also in practice they survived many times human lives. Ballistic parachute systems are quite easy to apply on the conventional fixed-wing aircrafts, but quite opposite situation one can meet in case of autogyros or other vehicles with the rotating wing. In such a case there exists a big probability of the collision between deployed parachute canopy and the rotor-blades, which may induce the uselessness of the system. The question – how to solve this problem became the main motivation for the authors of this paper for undertaking the investigations aimed on application of ballistic parachute systems on the light gyroplanes. They are conducted within BEWIR project supported by National Center for Research and Development. The research work was divided on two main courses: calculations and numerical simulations of the dynamic behavior of the gyroplane during parachute system activation and experimental tests on autogyro scaled models. The use of scaled models allowed to reduce risk associated with testing prototypes of ballistic parachute systems. There are presented in the paper the mile-stones of preparation work to the in-air tests of the system prototypes as well as the results of first experiments.

Keywords. Gyrocopters, Parachute, Rescue System.