

Review on the cost and performance of a wige craft a commercialization prospective

ABSTRACT

This study is prepared as an analysis on potential application and commercialization of the wing-in-ground effect craft (WIGE craft) as a new transportation system for domestic market. As the needs analysis and concept exploration phases commonly carried out within the concept development of a new complex system, this study may serve as validation answers to some basic questions such as “Is there a valid need for this new system?”, “Is there a practical approach to satisfying such need?”, “What performance is required?”, and “Is there at least one feasible approach to achieving such performance at an affordable cost?”. The analysis on potential of application and commercialization of WIGE craft would constitute a basis for making a decision as to whether or not to invest in a further development effort. The conducted analysis can be also considered as a “feasibility study”, which in this case has been based on comparison of certain key features of a WIGE craft with those of other existing transportation vehicles that remain offering services as the “proven” alternative concepts. The key features of a WIGE craft should be in the first place in its capabilities, operational effectiveness, and in its performance requirements, which are supposed to achieve the most beneficial balance between capability, operational life, and cost. During the process of study, it has been found that a WIGE craft may fill in the gap between aircrafts and marine vehicles in terms of technological and operational advantages. However, the operational costs of WIGE craft have been found to be relatively higher if compared to those of other existing transport vehicles. Besides, as a matter of fact, a WIGE craft has never reached acceptance as mainstream transport vehicles, because apparently a WIGE craft contains inherent stability problem due to coupled effect of variation in angle of attacks and in altitude above the surface, which require a solid and generic solution. A further development effort beyond this current study would be the engineering development, which commences with the identification and reduction of development risks. Nevertheless, it can be stated that the development of a WIGE craft may give invaluable advantages in the development of new concept and technology.

Keyword: Wing-in-ground-effect (WIGE); Wing-in-surface-effect (WISE); Wingship; Ekranoplan