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Design of a Decision Support System for Safe Landing of High-Drag, Low-Inertia Light Sport and Experimental Aircraft

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Abstract: The landing sequence of flight poses many hazards, especially for pilots of light sport and experimental aircraft classified as high-drag and low-inertia. Safety concerns arise by the cognitive workload required for pilots to land. This is made worse by the lack of standard landing procedures for such aircraft, which often are not compatible with existing resources for aircraft with larger mass and less relative drag. Using real flight data gathered by such an aircraft, a model was developed which builds possible landing approaches using pilot controlled variables – airspeed and engine RPM. This model considers engine failures as well as final descent rates in order to determine what landing sequence is the safest, and it can be custom tailored to any high-drag low-inertia aircraft. Results have shown that approaches using two different angles of descent with a transition altitude tend to be safer, while approaches with one angle minimize pilot workload.

Keywords: Aviation, Decision Support System, Sport Aviation, Safety