Abstract

The general aviation population is full of vintage aircraft. Built in the heyday of personal aviation, these machines embody the spirit of aviation; freedom afforded from the everyday monotony of earthbound people. As technology advanced and air traffic became more congested, new requirements were set forth by governing bodies to ensure the safety of aircraft. These regulations limited the capability of vintage general aviation aircraft. This report was commenced to understand the necessary steps required to add modern technology to old aircraft, as well as design a system that would enhance the capability of vintage aircraft while keeping their antique personality intact. This system was achieved with a Sandia 165 transponder and a Tenergy lithium polymer battery pack. Regulations research showed that biennial, in-depth inspections would be required to maintain compliance in the national air traffic system. There were also operation requirements, including a requirement to operate the transponder at all times when the aircraft was flying. These regulations were secondary, however, to the freedom regained by the pilot to be unencumbered with any airspace concerns. The cost of the system would be approximately $2,500. Based on a study of rerouting procedures, an estimate of a 10% increase in efficiency was determined. This indicates that the investment would be recouped after approximately 780 cross country hours in congested airspace.