

Stealth Mode *How a solar-powered aircraft could quietly change the way airports do business*

Colorado's own Aero Electric Aircraft Corporation (AEAC) unveiled the Sun Flyer on May 11, 2016. This revolutionary training aircraft utilizes solar energy to power the aircraft instead of traditional fossil fuels.

According to AEAC, the Sun Flyer's control surfaces feature solar panels that are coupled with lithium ion batteries to store power. This two-seater aircraft, designed and built at the Centennial Airport, may be small in size, but it is massive in industry potential.



A new financial model. Although an exciting new technology, the Sun Flyer could require new approaches for airport managers to prevent economic loss. *(Photo courtesy AEAC)*

Reducing the Cost of Flight Education

Flight training can be cost-prohibitive. According to the Aircraft Owners and Pilots Association, instruction to obtain a private pilot license can cost an individual between \$5,000 and \$9,000. Professional pilot training can easily eclipse more than \$100,000. With a diploma in hand (and debt in their pocket), these new pilots are often making low wages flying for regional airlines. This paradigm has produced a shortage of pilots in the nation, and many regional carriers are feeling the pinch.

What is a major driver of the high cost of flight training? Fuel.

Fuel prices fluctuate and can cause major headaches for those planning their flight training's finances. The Sun Flyer, however, is immune to market changes in petroleum. As a result, the anticipated hourly operating cost is significantly lower than current training aircraft. The aircraft makes flight training more affordable, enticing future pilots to return to the skies in a more economical fashion.

An Environmentally Friendly Aircraft

Colorado's diverse ecological climates include towering mountain passes, pristine lakes and areas of solitude. Coloradans realize the importance of protecting the both urban and rural environments. Aircraft can have a massive impact on their surroundings, regardless of location. Traditional aircraft are undeniably one of the culprits of greenhouse gas emissions and additional noise.

The Sun Flyer demonstrates a major step toward environmentally sustainable aircraft design. The Sun Flyer relies entirely on solar energy and therefore will be a zero-emission vehicle. According to AEAC, the Sun Flyer's noise levels are approximately 30 decibels quieter than comparable piston-driven aircraft. Simply put, this aircraft could fly through the skies and barely leave a trace.

Airport managers should be aware that the transition to solar- and electric-powered aircraft could influence fuel sales. New financial models could be on the horizon to preserve the economic relationship between operators and airports as these developments occur.

Armstrong recommends a collaborative approach with any non-fuel consuming aircraft operators to ensure a financially advantageous relationship within the limits of FAA grant assurance and your airport's minimum standards.



Airports and the Sun Flyer

What makes the Sun Flyer so dynamic are the micro and macro level benefits the aircraft can have for your airport. Any aviation enthusiast would be excited to see the Sun Flyer on their local airport's apron.

Who could be even more excited? Airport neighbors. Operations of the Sun Flyer, particularly in noise-sensitive areas, could substantially decrease noise impacts. This would be a huge benefit for many Denver-metro airports with adjacent high-density residential properties.

In addition this could result in increased general aviation activity by allowing general aviation to be more affordable to the general public and increase tiedowns, and hangar leases and development at airports.

The magnitude of these changes would likely take years after aircraft certification to be seen and would be an indirect benefit.

However, Colorado airports such as Alamosa, Aspen, Cortez, Grand Junction, and Pueblo could look forward to increasing regional airline

reliability in the future if the Sun Flyer is truly the next generation of flight training.

Although the Sun Flyer offers exceptional benefits, some drawbacks do exist. Sun Flyer operations at your airport could cause fuel flow charge revenues to stagnate or even drop. Due to the FAA's economic nondiscrimination grant assurance, airport operators may not be able to impose increased fees for Sun Flyers versus fuel-consuming aircraft.

For this reason, Armstrong recommends a collaborative approach with any non-fuel consuming aircraft operators to ensure a financially advantageous relationship within the limits of FAA grant assurances and your airport's minimum standards.

What does all of this mean for you as an airport manager? You could see an increase in operations while simultaneously reducing your facility's noise footprint. A lower hourly operating cost will drive greater demand on an aircraft that has a reduced noise output.

The potential downside of having Sun Flyer operations at your airport could be no growth in fuel flowage fee



revenues by this type. General aviation airports where AvGas sales are predominate could particularly be impacted by this new technology. The lack of fuel sales by the Sun Flyer may extend beyond the airport and could have a minor impact on state aviation grant funding generated through aviation fuel taxes. According to Colorado's Department of Transportation – Aeronautics Division, 0.6 percent of the aviation fuel tax revenues generated are from AvGas sales which could be impacted by the use of electric aircraft.

It is important to bear in mind the importance of balancing additional costs upon electric aircraft operators and regaining possible lost airport revenues to ensure there is a mutually beneficial economic relationship. The technology of electric aircraft is still in its infancy and will be fascinating to see develop over time.

The Sun Flyer is poised to begin the certification process with the FAA shortly. There are already several deposits for aircraft orders by flight training programs according to AEAC. Once the proving runs have been completed, the Sun Flyer will quietly take to the skies. The Sun Flyer has the potential to be a winner for the aviation industry, prospective pilots, airport managers, and airport neighbors.

Some possible solutions for both airports and the State to protect against potential economic losses include:

Implement state registration fees for electric aircraft.

Collaborate with the Division of Environmental Health and Sustainability to develop economic assistance or rebate programs for airports and airport businesses impacted by reduced fuel flowage fee revenues.

Market your airport to attract specialized aviation service operators focused on electric and solar aircraft.

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facilities ranging from rural general aviation to commercial service airports throughout the western United States. In his role as a planner, he develops Airport Master Plans, Airport Layout Plan Updates, and Environmental Assessments. He obtained a Master of Business Administration from Embry Riddle Aeronautical University in 2015. He also obtained a Bachelor of Business Administration in Airport Management, and a Bachelor of Arts in Political Science from the University of North Dakota in 2013. While in college, John spent his summers working the docks for a Seattle-based float plane airline. John is a six-year member of the American Association of Airport Executives.

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