EAA Chapter 81 Meeting Minutes
15 May 2021

Meeting called to order at 10 am by Chapter President Erik Fjerstad. Prior meeting minutes accepted as published. Financials presented by Treasurer Kevin Byers, reporting ending balance of $4372. Major expenses included hangar rent at $1375, major income was hangar usage fees of $800 (thank you very much George Jenson).

Visitors present included Edmond Miguel Chacolla and his father, Chris Daley (looking for a light sport airplane), Bruce Maxwell, and David Contreras (owns part of an RV-6 kit but wants to build an RV-10).

Old business – none.
New business – none.

Next meeting – Regular meeting at Ryan Airfield Administration Building on 19 June at 10 am, subject presentation will be Bob Miller's “Crosswind Landing” lecture.

Meeting Feature Presentation – last on the agenda is Erik Fjerstad's presentation on electric aircraft. Here is a summary. Everything is going electric, so it seems, and how is this affecting aviation? What are the advantages and disadvantages for aircraft? Can I participate by buying an electric airplane, or converting and existing airplane to electric operation? What would be the performance of such a conversion? Erik summarized the benefits in terms of noise, vibration, cost and the drawbacks in terms of weight, range, payload. He presented an exercise showing how today's available technology works well enough for cars (Camry vs Tesla Model 3 comparison) but is lacking for a conversion without serious compromises in performance. Erik's example theoretical conversion of his RV-6A from gas to an “e-RV-6A” variant demonstrated the issue with today's batteries. Assuming the same gross weight, payload, and cruising speed, Erik computed the weight available for batteries by swapping out all the gas engine stuff and substituting electric components with the balance of weight left over for the batteries, in this case 453 lbs. The resulting range and endurance is 89 miles or 30 minutes at cruising speed, a significant drop from 855 miles for the gas version. To achieve the same range, a 3,400 lb battery would be needed, clearly not workable in a 1,700 lb airplane. Erik explained that the solution to the problem is a combination of improved components (better batteries over time), targeted missions (address short range flights), and different aircraft architectures that optimize the weight available for batteries. Practical examples of the targeted

missions include the Pipistrel Electro for flight training and the Beaver electric seaplane for air taxi. Alternative aircraft configurations will have more and lighter engines with the engines and batteries distributed about the vehicle so that most weight is directly supported by nearby lifting surfaces thereby minimizing structural weight historically involved in supporting cantilevered loads such as a heavy engine on the nose. Erik presented several examples of such configurations, such as the Eviation Alice commuter aircraft currently on order by Cape Air where 60% of the vehicle weight is the battery, and the Archer air taxi where the weight reduction includes the elimination of the flight crew. Erik's conclusion is that electrification is viable today for training and short missions and will become practical for commuter aircraft in the near future. Erik's “e-RV-6A” remains a pipe dream until batteries improve by a factor of at least 4, a factor of 8 is required to have a “similar performance conversion”.

Respectfully Submitted by Erik Fjerstad – Chapter President

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