Webinar and Demo: Real-time Simulation of Aircraft Electrical Systems with the RTDS Simulator

Wednesday, April 20, 2022

Questions and Answers

Q1: Will the webinar recording and slides be made available?

Yes. The webinar recording and slides are available to all registrants. A link has been included with this document in the post-webinar email. If you would like to refer a colleague to this webinar, it can be accessed later On Demand, after having been aired, at https://www.rtds.com/events/webinar-demo-real-time-simulation-of-aircraft-electrical-systems-with-the-rtds-simulator/.

Q2: Is there a reference circuit for the demo simulation?

The demo case will be released as a sample case in RSCAD FX 1.3. The reference for the circuit can be found in Chapter 24 – Power Electronic Systems for Aircraft in the book "Control of Power Electronic Converters and Systems" by Frede Blaabjerg.

Q3: Why has '6' been chosen as a parameter for the Substep environment?

The parameter '6' is the number of times the Substep subnetwork is executed per main timestep. In this case, the main timestep was 50 microseconds, so setting the parameter to 6 means that the Substep is 8.33 microseconds. The user can change this parameter depending on how large or small they want the Substep to be (i.e. the frequency range of interest for the power electronics circuit). The maximum Substep is 10 microseconds.

Q4: What is the reason for using a simple rectifier at the machine side?

In our research we found that some papers show this structure to establish the main AC bus. Refer to: "Overview of Aircraft Technology Solutions Compatible with the Concept of MEA" (Available here)

Q5: Is the APU included in this demo case?

No, the auxiliary power unit is not considered in this case. Additional components could be added to the case if the user wanted to include the APU.

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Q6: Can you show the mapping between the electrical system and the entire aircraft system?

We don't have a mapping graph, since the electrical system is a simplified one compared to the entire aircraft system. However, there are some notes in the released sample case to show what loads are. For example, the PMSM is to emulate the brushless motor driving ball screw actuator, the resistive load connected to the main ac bus is to simulate the lamp; the induction machine is to emulate the motor driving a hydraulic pump, and the dc motor connected at the 28V dc bus is the motor driving a fuel pump.

If you have any further questions, please contact marketing@rtds.com.

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