Instructions for Installing the Mixture Controller

Requirements:

This package includes controllers for the following four aircraft:

- Robert Young's Turbo-Normalized G36 Bonanza (https://github.com/roblenvic/Bonanza-Turbo)
- Just Flight Turbo Arrow III/IV (https://www.justflight.com/product/pa-28r-turbo-arrow-iii-iv-microsoft-flight-simulator)
- Carenado Seneca V (https://www.carenado.com/sitecarenado/product/pa34t-seneca-v-msfs2020/)
- Flysimware Cessna 414AW Chancellor

Installation Instructions:

Overview:

For each aircraft, the mixture controller acts as an invisible WebAssembly (WASM) gauge in the cockpit which detects the mixture setting from a hardware controller (throttle quadrant, HOTAS with mixture axis, etc.) and sets a corresponding core-sim mixture setting which will produce realistic fuel/air mixture. To properly install the mixture controller, you will need to add the WASM gauge to the aircraft's "panel" folder, update the panel.cfg file to include a reference to the new WASM gauge, and update the layout.json for the aircraft so that the sim will load the new WASM gauge when the aircraft loads.

First Step: Download MSFS Layout Generator:

To successfully install the mixture controller, you will need the MSFS Layout Generator app, which is available on GitHub here:

https://github.com/HughesMDflyer4/MSFSLayoutGenerator

Every airplane in MSFS has a layout.json file which specifies all the files that are part of the airplane's configuration. This mixture controller mod requires adding an additional file to the airplane's panel folder, so the layout.json must be updated to include the new WASM file. MSFS Layout Generator automatically generates an updated layout.json after the WASM file is added to the airplane's directory. Follow the instructions at the link above to download the MSFS Layout Generator.

Robert Young's Turbonormalized G36 Bonanza Mod:

1. Backup the existing panel.cfg and layout.json files from Robert Young's mod in case anything goes wrong with the installation. To do this:
    a. Navigate to your community folder. If you need help finding it, use the instructions provided by Just Flight here:

https://support.justflight.com/support/solutions/articles/17000113722-where-is-the-community-folder-msfs2020

   b. Enter the "Bonanza-Turbo-V4-1SU6" directory and copy the layout.json file. Paste it to another folder outside the MSFS directory.
   c. Enter the SimObjects\Airplanes\Asobo_Bonanza_G36\panel folder. Copy "panel.cfg" and paste it to another folder outside the MSFS directory.
2. Extract the included TurboEngineMixtureController-main.zip file anywhere on your PC.
3. Inside the extracted file, navigate to the folder named "Turbo Bonanza"
4. Select both "Bonanza_Mixture_Controller.wasm" and "panel.cfg" and copy them.
5. Navigate to your MSFS community folder. Then navigate to the panel folder as follows: Bonanza-Turbo-V3\SimObjects\Airplanes\Asobo_Bonanza_G36\panel
6. Paste "Bonanza_Mixture_Controller.wasm" and "panel.cfg" inside the panel folder. When prompted, confirm that you would like to overwrite the existing panel.cfg file.
7. Return to your community folder and navigate to "Bonanza-Turbo-V4-1SU6"
8. Drag and drop the layout.json file inside "Bonanza-Turbo-V4-1SU6" onto the MSFS Layout Generator app (see the info in the first step on page 1 of this guide). This will automatically generate a new layout file.
9. Start Microsoft Flight Simulator (or restart it if it was already running). Select the Turbo Bonanza and begin a flight. If the mixture controller is working, you should see the virtual cockpit mixture lever gradually reduce during the climb from 0 - 10,000 ft.

Just Flight Turbo Arrow III/IV:

1. Backup the existing layout.json and panel.cfg files from the Turbo Arrow in case anything goes wrong with the installation. To do this:
   a. Navigate to your community folder. If you need help finding it, use the instructions provided by Just Flight here: https://support.justflight.com/support/solutions/articles/17000113722-where-is-the-community-folder-msfs2020
   b. Enter the "justflight-aircraft-pa28-turboarrow" directory and copy the layout.json file. Paste it to another folder outside the MSFS directory.
   c. Enter the SimObjects\Airplanes\JF_PA28_TurboArrow_III\panel folder. Copy "panel.cfg" and paste it to another folder outside the MSFS directory. This will create a backup for the Turbo Arrow III's panel config file. The "panel.cfg" file for the Turbo Arrow IV is identical, so there is no need to create a separate backup for the Turbo Arrow IV.
2. Extract the included TurboEngineMixtureController-main.zip file anywhere on your PC.
3. Inside the extracted file, navigate to the folder named "Turbo Arrow"
4. Select both "JFTurboArrow_Mixture_Controller.wasm" and "panel.cfg" and copy them.
5. Navigate to your MSFS community folder. Then navigate to each of the panel folders for the Arrow III and Arrow IV as follows:

   justflight-aircraft-pa28-turboarrow\SimObjects\Airplanes\JF_PA28_TurboArrow_III\panel
   justflight-aircraft-pa28-turboarrow\SimObjects\Airplanes\JF_PA28_TurboArrow_IV\panel

6. Paste JFTurboArrow_Mixture_Controller.wasm" and "panel.cfg" in each of the panel folders listed above. When prompted, confirm that you would like to overwrite the existing panel.cfg files.
7. Return to your community folder and navigate to "justflight-aircraft-pa28-turboarrow"
8. Drag and drop the layout.json inside "justflight-aircraft-pa28-turboarrow" onto the MSFS Layout Generator app (see the info in the first step on page 1 of this guide). This will automatically generate a new layout file.
9. Start Microsoft Flight Simulator (or restart it if it was already running). Select either the Turbo Arrow III or the Turbo Arrow IV and begin a flight. If the mixture controller is working, you should see the virtual cockpit mixture lever gradually reduce during the climb from 0 – 10,000 ft.

Carenado Seneca V:

1. Backup the existing layout.json and panel.cfg files from the Seneca V in case anything goes wrong with the installation. To do this:
    a. Navigate to your official packages folder. You can find it by moving one level up from your community folder. If you need help finding the community folder, use the instructions provided by Just Flight here: https://support.justflight.com/support/solutions/articles/17000113722-where-is-the-community-folder-msfs2020
    b. Enter the Official directory. If you've purchased MSFS from the Microsoft Store, there is a subdirectory inside Official called "OneStore." Enter the OneStore directory and then enter the "carenado-aircraft-pa34-senecav" directory and copy the layout.json file. Paste it to another folder outside the MSFS directory.
    c. Enter the SimObjects\Airplanes\Carenado_PA34_Seneca_V\panel folder. Copy "panel.cfg" and paste it to another folder outside the MSFS directory.
2. Extract the included TurboEngineMixtureController-main.zip file anywhere on your PC.
3. Inside the extracted file, navigate to the folder named "Seneca V"
4. Copy "SenecaV_Mixture_Controller.wasm".
5. Navigate to your "Official\OneStore" folder as described in 1b above. Then navigate to the panel folder for the Seneca V as follows:

    carenado-aircraft-pa34-senecav\SimObjects\Airplanes\Carenado_PA34_Seneca_V\panel

6. Paste SenecaV_Mixture_Controller.wasm".
7. The "panel.cfg" file from Carenado is copyrighted, so I will not provide a drag-and-drop version here. Open panel.cfg in Notepad (or a text editor of your choice) and add the following lines after the [Vcockpit10] section and before the [Color] section:

```
[Vcockpit11]
size_mm=0,0
```

```
pixel_size=0,0
texture=$PFD
background_color=0,0,0
htmlgauge00=WasmInstrument/WasmInstrument.html?wasm_module=
SenecaV_Mixture_Controller.wasm&wasm_gauge=FdGauge,0,0,1,1
```

(The line beginning with htmlgauge00 should be one continuous line with no breaks or spaces. It doesn't fit on one line in this document.)

8. Return to your Official\OneStore folder and navigate to "carenado-aircraft-pa34-senecav"
9. Drag and drop the layout.json inside "carenado-aircraft-pa34-senecav" onto the MSFS Layout Generator app (see the info in the first step on page 1 of this guide). This will automatically generate a new layout file.
10. Start Microsoft Flight Simulator (or restart it if it was already running). Select the Seneca V and begin a flight. If the mixture controller is working, you should see the virtual cockpit mixture levers gradually reduce during the climb from 0 – 10,000 ft.

Flysimware Cessna 414AW Chancellor:

1. Backup the existing layout.json and panel.cfg files from the Chancellor in case anything goes wrong with the installation. To do this:
    a. Navigate to your community folder. If you need help finding the community folder, use the instructions provided by Just Flight here: https://support.justflight.com/support/solutions/articles/17000113722-where-is-the-community-folder-msfs2020
    b. Enter the "flysimware-cessna-414a" directory and copy the layout.json file. Paste it to another folder outside the MSFS directory.
    c. The Flysimware 414A contains 3 panel options. You will need to modify each of the three panel folders to ensure all of them use the mixture controller.
        i. Enter the SimObjects\Airplanes\flysimware_Cessna_414A\panel folder. Copy "panel.cfg" and paste it to another folder outside the MSFS directory.
        ii. Enter the SimObjects\Airplanes\flysimware_Cessna_414A\panel.GTN750 folder. Copy "panel.cfg" and paste it to another folder outside the MSFS directory.
        iii. Enter the SimObjects\Airplanes\flysimware_Cessna_414A\panel.GTN750XI folder. Copy "panel.cfg" and paste it to another folder outside the MSFS directory.
2. Extract the included TurboEngineMixtureController-main.zip file anywhere on your PC.
3. Inside the extracted file, navigate to the folder named "Cessna 414AW"
4. Copy "C414_Mixture_Controller.wasm".
5. Navigate to your community folder as described in 1a above. Then navigate to the three panel folders for the Cessna 414 Chancellor as follows:

flysimware-cessna-414a\SimObjects\Airplanes\flysimware_Cessna_414A\panel
flysimware-cessna-414a\SimObjects\Airplanes\flysimware_Cessna_414A\panel.GTN750
flysimware-cessna-414a\SimObjects\Airplanes\flysimware_Cessna_414A\panel.GTN750XI

6. Paste C414_Mixture_Controller.wasm" into each of these folders.
7. Open the "engines.cfg" file inside the following directory:

   flysimware-cessna-414a\SimObjects\Airplanes\flysimware_Cessna_414A\

   Search for "fuel_air_auto_mixture=1" in the file. Change this to "fuel_air_auto_mixture=0" and save the file. This disables automixture to allow the mixture logic to work as designed.

8. Return to the "Cessna414AW" folder inside the location where you extracted the mod zip file. There are three subfolders, one for each panel configuration. Copy the "panel.cfg" file inside each folder into the corresponding panel folder in the list in number 5 above.
9. The default sound configuration for the Chancellor includes a clicking sound when the mixture lever moves. Since this mixture controller continuously adjusts the sim mixture axis, the clicking sound effect must be disabled. To do this, copy the "sound.xml" file located in the mod folder and paste it over the sound.xml file for the Chancellor in this directory:

   flysimware-cessna-414a\SimObjects\Airplanes\flysimware_Cessna_414A\sound

   The modified sound file simply disables the clicking sound effect by "commenting out" the relevant lines of XML code. The sound can be restored by removing the comment marks in the code.
10. Return to your community folder and navigate to "flysimware-cessna-414a"
11. Drag and drop the layout.json inside "flysimware-cessna-414a" onto the MSFS Layout Generator app (see the info in the first step on page 1 of this guide). This will automatically generate a new layout file.
12. Start Microsoft Flight Simulator (or restart it if it was already running). Select the Chancellor and begin a flight. If the mixture controller is working, you should see the virtual cockpit mixture levers gradually reduce during the climb from 0 – 10,000 ft.