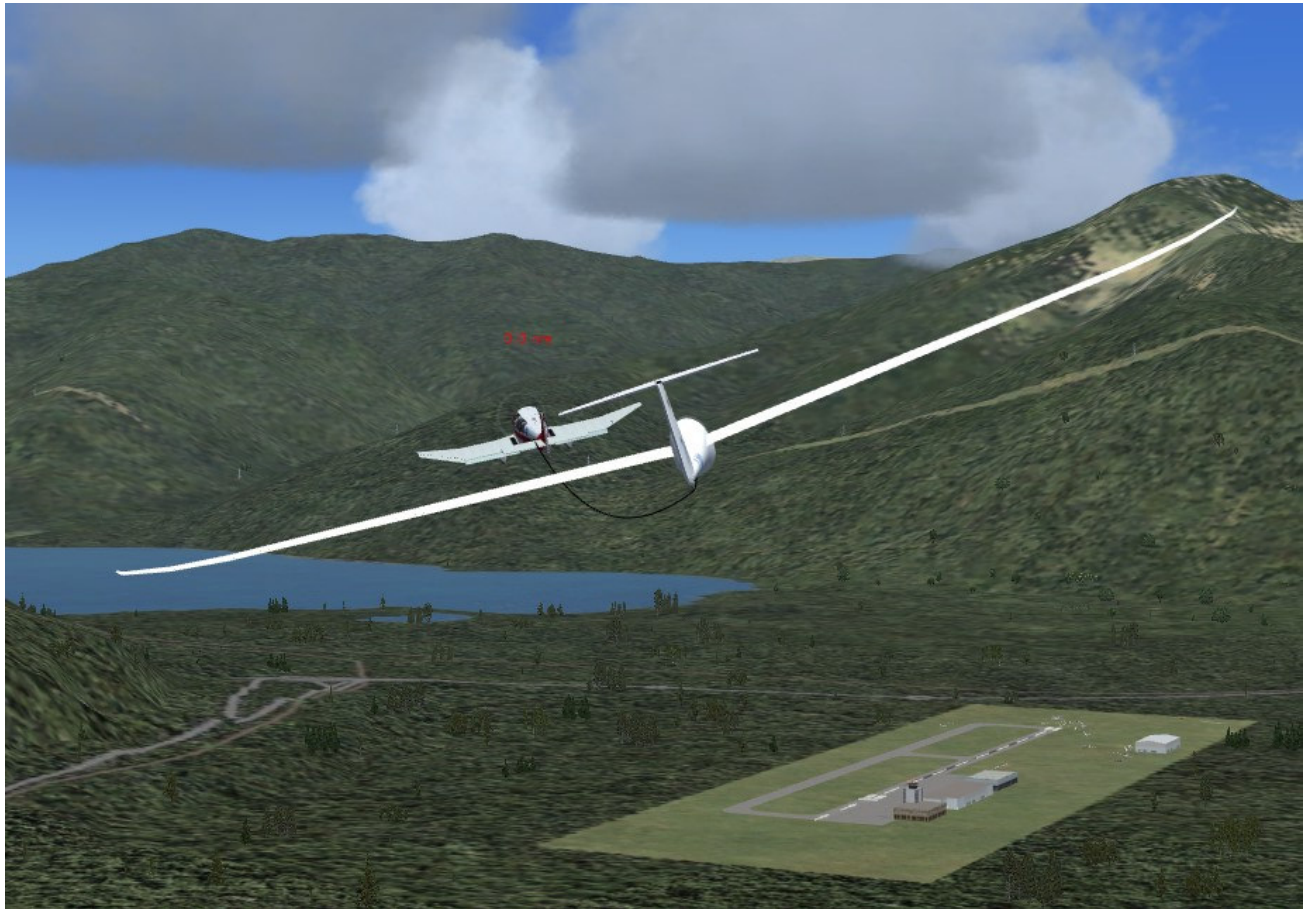


Tutorial: Flying banked turns with Tow-Plane in FSX



Preamble

first let me say that English is not my native language (is German), wherefore I trouble you to be appreciative of my possibly made mistakes in writing or grammar. If you have suggestions for improvement concerning to my phraseology, vocabulary or typing error I would be deeply grateful for giving me notice. In advance thank you for your effort.

Since the FSX-distribution it's possible to call for a towplane that will get the glider pilot in the air (hold CTRL and SHIFT and press Y). Although this feature is great - unfortunately it is not very realistic because the towplane is always flying straight ahead and at first view it's neither possible to stick around the airfield nor to navigate the towplane directly into the thermals or to avoid crashing in an obstacle (e.g. in the mountains).

With this tutorial I will put things right.

The next thing is that a change of the Tow-Plane is not featured with „One-Button-Click“ but it is possible to do this. It's an own tutorial, see „Change Tow-Plane in FSX“ (tutchtwp.zip).

Requirements

- MS-Flightsimulator X „Deluxe“ or „Professional“ (the Standard-Edition features no Software Development Kit, which is required)
- Installed SDK
- Activated „Traffic Toolbox“ in the <dll.xml> (see also the Traffic Toolbox SDK)

Background

The towplane is an AI-Plane which follows no AI-flightplan but the given data in the file <sim1.dll> (main path of FSX). There is the Towplane, Throttle and Pitch specified, see following data:

0x0C9A0	4D61 756C 6520 4D37 2032 3630 4300 0000	Maule M7 260C...
0x0C9B0	546F 7750 6C61 6E65 5475 726E 4672 6571	TowPlaneTurnFreq
0x0C9C0	7565 6E63 7900 0000 546F 7750 6C61 6E65	uency...TowPlane
0x0C9D0	5475 726E 4465 6C74 6148 6561 6469 6E67	TurnDeltaHeading
0x0C9E0	0000 0000 546F 7750 6C61 6E65 4D69 6E54TowPlaneMinT
0x0C9F0	7572 6E41 6C74 6974 7564 6500 546F 7750	urnAltitude.TowP
0x0CA00	6C61 6E65 5469 746C 6500 0000 546F 7750	laneTitle...TowP
0x0CA10	6C61 6E65 436C 696D 6250 6974 6368 0000	laneClimbPitch..
0x0CA20	0000 0000 0000 2E40 CDC CCCC CCCC 2F40@íííííí/0
0x0CA30	0000 803F 5469 7275 7274 466F 7262 6572	6x0CA30+5469 7275 7274 466F 7262 6572

Given data:

Used Tow Plane:	Maule M7 260C
Pitch of Towplane:	- 8 degrees
Throttle:	75 %
Flaps:	done
Heading (TurnDetaHeading):	Heading of glider at start-position

This information should give you a little view behind the scenes but you should not change anything in this file because if you make some mistakes your FSX won't start anymore. So make a backup if you are not able to help doing changes in the <sim1.dll>!!!

Procedure (this is you have to do)

First you have to install the SDK. Afterwards activate the Traffic-Toolbox in the file <dll.xml> (you find it here: ...\\Documents..\\Username\\Application data\\Microsoft\\FSX\\):

```
<Launch.Addon>
<Name>Traffic Toolbox</Name>
<Disabled>False</Disabled>
<ManualLoad>False</ManualLoad>
<Path>..\\Microsoft Flight Simulator X SDK\\SDK\\Environment Kit\\Traffic Toolbox
  SDK\\traffictoolbox.dll</Path>
</Launch.Addon>
```

Flying turns with the Tow-Plane:

If the Traffic Toolbox is activated in the menubar appears the entry:

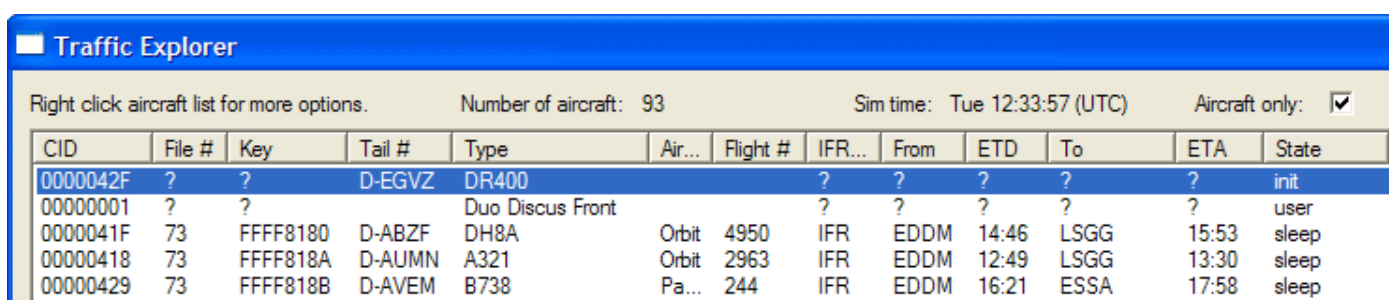
<**Extras/Traffic Toolbox**>

And the menu-item:

<**Explorer**>

After you called the Tow-Plane (hold CTRL and SHIFT and press Y) start the Traffic-Explorer and there you will see the Tow Plane as AI-Aircraft with value „init“ in the column „State“.

Best is to sort the AI-Planes in column „Key“ because the Tow-Plane will then appear in the first line – the own plane is one line below. The following screenshot shows my current Tow Plane „Robin DR 400“, FSX-Standard is the default Maule (how to change the Tow-Plane see my other tutorial „Change Tow-Plane in FSX“ (tutchtpw.zip):



Traffic Explorer												
Right click aircraft list for more options.					Number of aircraft: 93		Sim time: Tue 12:33:57 (UTC)		Aircraft only: <input checked="" type="checkbox"/>			
CID	File #	Key	Tail #	Type	Air...	Flight #	IFR...	From	ETD	To	ETA	State
0000042F	?	?	D-EGVZ	DR400		?	?	?	?	?	?	init
00000001	?	?		Duo Discus Front		?	?	?	?	?	?	user
0000041F	73	FFFF8180	D-ABZF	DH8A	Orbit	4950	IFR	EDDM	14:46	LSGG	15:53	sleep
00000418	73	FFFF818A	D-AUMN	A321	Orbit	2963	IFR	EDDM	12:49	LSGG	13:30	sleep
00000429	73	FFFF818B	D-AVEM	B738	Pa...	244	IFR	EDDM	16:21	ESSA	17:58	sleep

After successfull starting with the Tow Plane there are some possibilities to initiate a turn. Afterwards the description of two of them which make sense.

a. Turn with predefined bank in desired direction or destination:

Just right click on the Tow Plane within the Traffic Explorer and choose the entry „Stick and Rudder“. There are two given settings. First the -8 degrees pitch and second the 75 % throttle. Now you can define the bank-degrees - negative (e.G. -15) mattered a right turn and positiv (e.G. 15) a left turn – and press the Apply-button. See screenshot on next page:

If you want to fly a continuous turn (e.g. 360 degrees) unfortunately the „Apply-button“ must be pressed all 3-5 seconds otherwise the Tow Plane roll back to 0 degrees and will fly straight ahead again (this is the predefined setting in the <sim1.dll>).

The described method is suitable to change the direction in the mountains (to avoid crashes with obstacles) or to steer the Tow Plane directly into the thermals.

b. Turns with the Traffic-Explorer-Function „Land“:

Just right click on the Tow Plane within the Traffic Explorer and choose the entry „Land“. Now enter the ICAO-Code of the airfield you started from and choose the opposed runway (where you started from) and press OK.

The Tow Plane will make a 180-degrees-turn and fly over the airfield and will follow afterwards the AI-Flightplan for an usual AI-GoAround. As soon as in the column „State“ appears the value „GoAround“ you can use the menu-item „Land“ again to fly another 180-degrees turn. In this case you have to choose the other runway (the original runway you started from) .

Although the input „Land“ will lead a normal AI-Plane to land at the chosen airport it will **not** happen to the Tow Plane because it has a fixed pitch of -8 degrees with 75 % throttle (defined in <sim1.dll>). That is to say the Tow Plane will hold climbing.

The method with function „Land“ is very suitable to simulate starting with Tow Plane and stick around the airfield. So you are able to release the tow within the aerodrome-circuit as it is in real flying e.g. at a flying school.

Example:



1. Start a flight with a glider at airport „Zell am See“ (LOWZ) in Austria on runway 26
2. Call a Tow Plane with „Ctrl+Shift+Y“
3. Start the Traffic Explorer (Extras/Traffic Toolbox/Explorer) and move the window (best on second screen)
4. Start on runway 26
5. After you reach about 300 meters (984 ft) over ground (AGL) use the function „Land“ in the menu of the Tow-Plane within the Traffic Explorer and enter the ICAO-Code <LOWZ> and choose runway „RWY 8“. Enter <OK> .
6. The Tow-Plane will turn 180 degrees back to the airfield with direction of runway 08.
7. Once the airfield is flown over you can use the function „Land“ again to fly another 180-degrees turn while choosing the opposite runway „RWY 26“ in the dropdown-menu.

Disclaimer

Although the procedures are tested in-depth I assume no liability for any loss, damage or inconvenience arising as a consequence for any use of this tutorial.

Last but not least

Have lot's of fun with realistic soaring in FSX.

If you are displeased with the standard Tow-Plane „Maule“ and want to change it to another model of your choice see my other tutorial „Change Tow-Plane in FSX“ (tutchtwp.zip).

It would give me great pleasure if you have helpful suggestions to the theme or if you send me your feedback !

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Screenshots:

The used planes from the screenshots over „Zell am See“ in Austria are the superb „Duo Discus“ from Wolfgang Piper (he has designed lot's of realistic gliders) as well as the Tow Plane „Robin DR400 Regent“ from Yannick Lavigne, Fred Banting, Rob Young and Christian Daboudet with textures (repaint) „D-EGVZ“ from Mike Formatschek.

Thanks to all this designers, I have the highest respect for their ability !