

Flight Manual

Flightport Zeppelin NT

Only for FSX (SP1+SP2, XP, Vista 32+64)



The Zeppelin NT was built with FSDS3.5. It's the first "plane"-model made of Thomas for FS, so be patient – it is not perfect. Also creating the airfile was really strange – Microsoft's simulator has left some important informations about flying or creating airships. But finally there is a very good implementation of the Zeppelin NT, which make a very stable and easy flying possible and covers the excellent maneuverability of the real Zeppelin NT. Joerg did an amazing job.

The flight behavior in FS is something between normal aircraft, helicopter and VTOL.

Very good technical data and background informations about Zeppelin NT in reality you will find there: <http://www.carnetdevol.org/zeppelin/Technical.html>

What do you get?

- Multi LOD-model with a lot of animations like propeller-swivel, rudders, gear, mooring mast, doors, steps e.g.
- Prototype D-LZFN and several further repaints (ICARO, Flightport etc.)
- Fully operable virtual cockpit with mouse help function and a lot of animations (RPM, mixture, throttle, rudder control, propeller-swivel e.g.)
- Airfile optimized to fly a Zeppelin NT in FS
- Lighting and effects
- Blanc textures (32-Bit) for repaints





Installation

- Unzip Zip-File first. Copy or move **Zeppelin NT FSX**-folder completely in your FSX-directory under **SimObjects\Airplanes**. That's all.
- After starting Flight Simulator you will find models under „Zeppelin NT“.
- Perhaps you will get a “Security Warning about gkCirrus.gau – Unknown distributor” – please quit this message with YES.

Important: Please read this!

Before you get started in Flight Simulator, you should know this:

Generally: This model was built for FS9 and is “only” optimized for FSX SP1 und SP2. So, its not a real FSX-model. At least DX10 graphics features are not included. (model is running with DX10 although). Also the airfiles are made for FS9 – but the Zeppelin NT is running in FSX not too bad as promised first. It is planned to publish a real FSX-Model later this year.

1. Zepellin NT has a very big contact surface against wind influence – and this is sumulated in Flight Simulator as well. It is very important to set **Parking Brakes** after loading the airship in FS. Take-Offs and Landings should be done against wind direction.

2. The easiest way to start engines is via keybord **Ctrl+E**. Why this? The model has 4 engines to simulate a stable flight behavior in all situations: take off, cruise and landing – in reality the Zeppelin NT has only 3. However, in VC you can control only 3 engine (like reality). So 1 engine is missing, if you get engines started only via VC.

But there is a simple way: Start all 3 engines manually via VC – but you shouldn't forget to push the Ctrl+E after that to bring the forth engine into live.

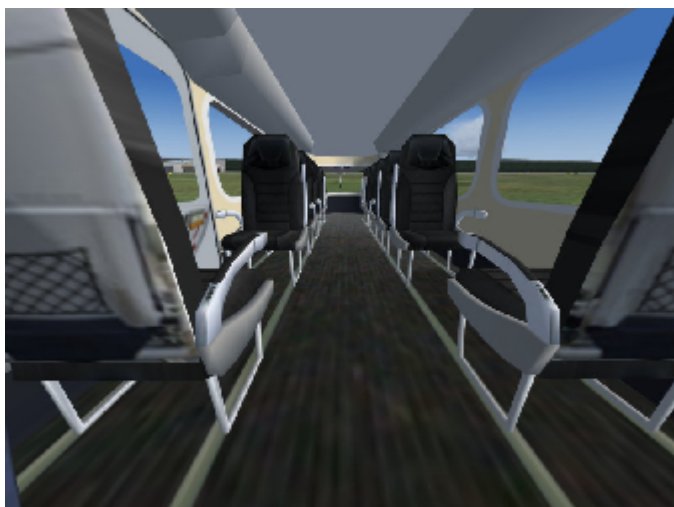
After starting all engines, you should swivel propellers via Flaps-Keys to 88 PER (percent). You can read it at the DYNO-gauge on main panel left of PFD. This value is also “Take-Off”-position. (See later “First Flight”).

3. With the spoiler key (air brakes) the **mooring mast** will appear and dissappear with a short animation. It is part of model, so an activation should only be done, if Zeppelin is on ground.

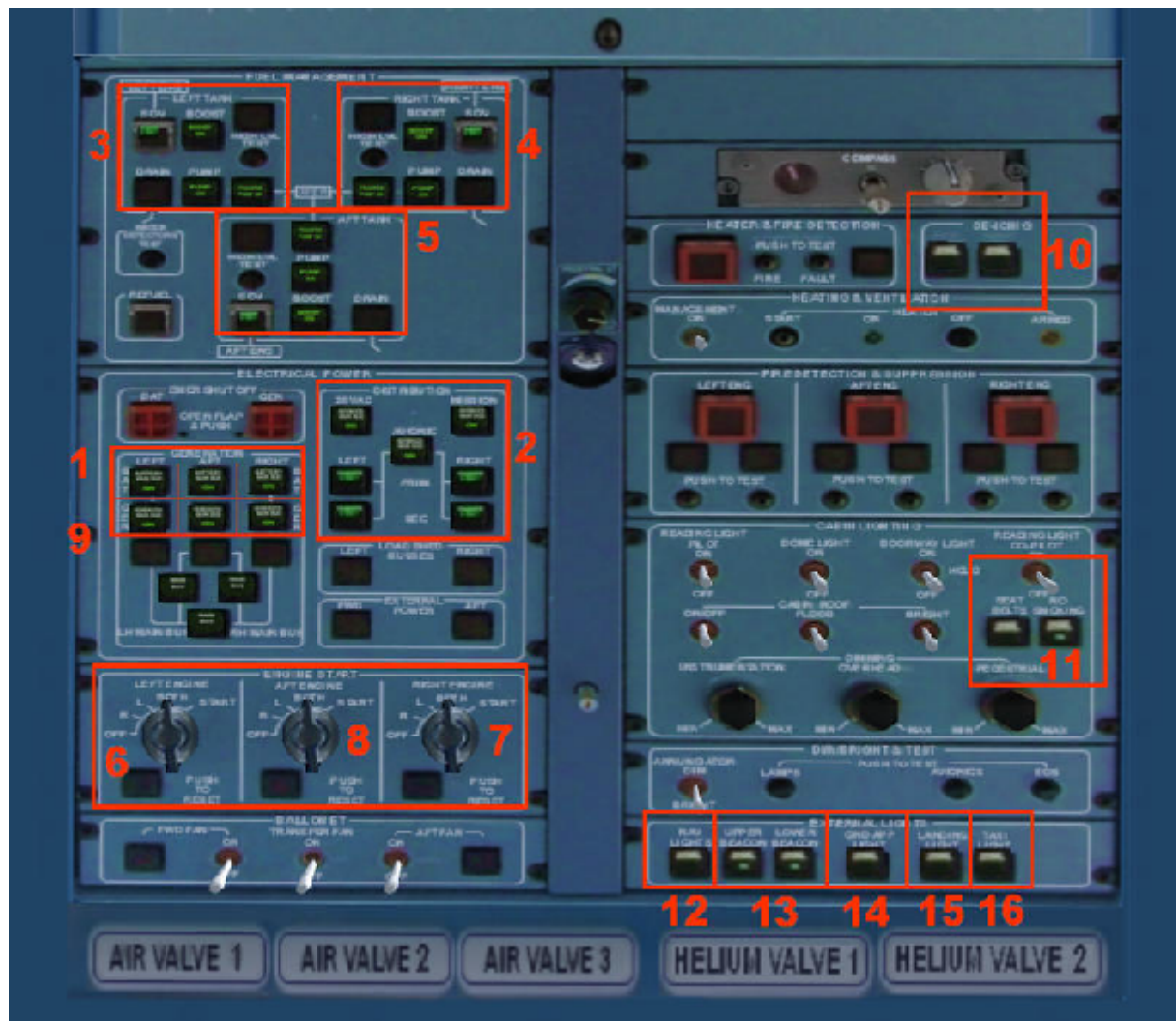
Cockpit



There is **no 2D-Cockpit** included – control and engines management is only possible via Virtual Cockpit VC. The best overview you will get with Zoom 0.75. The best readability of gauges you will get with Zoom 1.0 and plus. ICARO-GPS (only for ICARO-Group members) or Aerosoft's FSMap (payware) are not included.

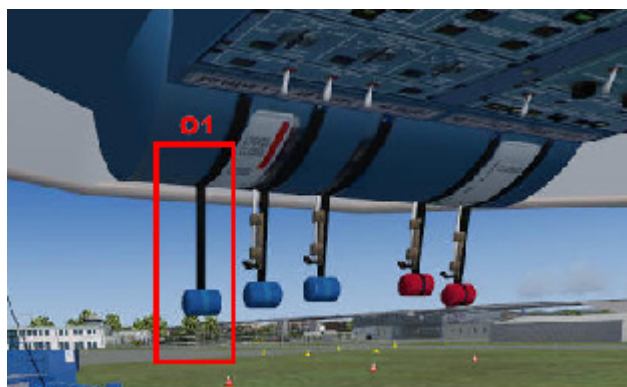


Overhead Panel



- 1 Battery Master Switches
- 2 Avionics Master
- 3 Fuel Management ENG LEFT
- 4 Fuel Management ENG RIGHT
- 5 Fuel Management ENG AFTER
- 6 Start LEFT ENGINE
- 7 Start RIGHT ENGINE
- 8 Start AFT ENGINE

- 9 Generator Switches
- 10 PITOT Heaters
- 11 SEAT BELT/NO SMOKING
- 12 NAV Lights
- 13 BEACON Lights
- 14 Panel Lights
- 15 LANDING Light
- 16 Taxi Light



O1 Elevator Trim (Mouse up & down)

Main Panel and Middle Console



- | | |
|--|---------------------------------------|
| 1 Propeller-Swivel-Display in Prozent | 19 HDG* |
| 2 Primary Flight Display PFD | 20 CALL* |
| 3 Navigation Display ND | 21 Audio Selector |
| 4 Davtron M803 (Uhr) | 22 EICAS 1 |
| 5 Shadin Multidisplay (TAS, RA, MSL, VS) | 23 EICAS 1 Switch on/off |
| 6 Ballonet Status Display* | 24 EICAS 2 |
| 7 Ambient Temp. and OAT | 25 EICAS 2 Switch on/off |
| 8 ICARO-GPS (for Members) | 26 DME Function* |
| 9 COM Radio1** | 27 MSG/WPT* |
| 10 NAV Radio 1** | 28 GPS/NAV SEL |
| 12 Transponder** | 29 DME NAV1/NAV2 |
| 13 COM Radio 2** | 30 Airspeed |
| 14 NAV Radio 2** | 31 VOR2/ADF |
| 15 ADF Radio** | 32 Altimeter |
| 16 Radio Avionic Master Switch | 33 Vertical Speed |
| 17 Marker Sound* | 35 FSMap (Aerosoft Payware not incl.) |
| 18 FCU* | |

Middle Console

- | | |
|----------------------|-----------------------------------|
| M1 PRM | M4 Swivel Handling Left PROPELLER |
| M2 Mixture | M5 Swivel Handling RIGHT PROP |
| M3 Thrust (Throttle) | M6 Swivel Handling AFT PROP |

*without function

**activation with mouse clic on the swap knobs/setting knobs after pushing Radio Master (16)

NOT TO USE FOR REAL AVIATION

Dyno-Swivel-Display(1)



Important for take off and landing procedures is the handling of propeller-swivels. You have to push flap keys (F5 to F8) to take control.

This gauge is a real display and shows the current settings of flaps-configuration in percent. The Zeppelin NT has 10 different positions of flaps.

With PER 0, swivel position is ready for cruise. With maximum position PER 100 is for vertical approaches.



PER 88 is the best swivel position for taking off very smooth. (The Zeppelin NT is taking off nearly vertical).

Shadin Display (5)

Shadin AMS 2009 shows different flight parameters like

TAS (True Air Speed) in kt,
RA (Radio Altitude) in ft,
MSL (Mean Sea Level) in ft and
VS (Vertical Speed) in ft/min.

You can change the parameters by clicking on the knob.



First Flight

Generally the Zeppelin NT will be controlled similar like a normal aircraft – via Joystick. The propeller swifels, which function is related to flaps of a normal aircraft. So, you have to control the Zeppelin NT with both control functions (rudder and swivel control) and throttle.

Engines Start

1. Set Parking Brakes
2. All three batteries LEFT, RIGHT and AFT (Overhead) ON (1)
3. Avionics Master (Overhead) ON (2)
4. Seat Belt and No Smoking Signs (Overhead) ON (11)
5. BEACON Lights (Overhead) ON (13)
6. Propeller-Swivel with Flaps-Key F7 until Swivel-Display (1) on Main Panel shows PER 88
7. Fuel Pump (Overhead) ON (3)
8. Boost Pump (Overhead) ON (3)
9. XFER Pump (Overhead) ON (3), the same with (4) and (5)
10. Start Engines STRG+E
11. Generators (Overhead) ON (9)
12. EICAS 1+2 (Main Panel) ON (23+25)
13. Radio Avionic Master (Main Panel) ON (12)
14. Beide PITOT-HEATER (Overhead) ON (10)
15. Mooring Mast Truck with Airbrake/Spoiler key
16. Lights as required

Takeoff

1. Release Parking Brakes
2. Throttle Full Power – Zeppelin NT is taking off very slowly
3. After reducing propeller-swivel stepwise with Flaps-Key F6 you will get a faster vertical climb speed until Swivel-Position PER 55. With a further reduced swivel position, Zeppelin NT will go to a more horizontal flight alignment. On position PER 77 rudder control becomes more and more efficient.

Important: The Zeppelin NT couldn't lift off with 100 percent swivel position (full Flaps F8). But this swivel position is quite well for a nearly vertically descent.

In reality there is no autopilot available. The Zeppelin NT has to trim out permanently by hand with air pumps, which blows the air through the hull (envelope). In FS it's not possible to simulate this behavior. So we solved it with the stock elevator trim function. To make it easier for you on cruise levels, there is the stock AP via Shift+2 available. It should only be used for holding altitude with ALT or descent/climb with VS. Other functions like HDG aren't very useful and make a stable flight impossible. But to change headings manually via rudder with selected ALT is working fine.

Landing

It works quite similar like take-off – on the other hand. First you have to reduce speed by taking back throttle (~40 kts) and increase propeller swivel position stepwise with F7. In a way of swivel position and throttle you have control your horizontal speed and sinking speed. You should touch down the airship nearly vertical with PER 100 and throttle control.

Land against wind direction

On the ground set Parking Brakes. To shut down engines please use CTRL+Shift+F1 (this makes sure all engines are off – see also Important: Please read this). The mooring Mast Truck appears with Airbrake-/Spoiler-Key.

Authors

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Airfiles: Joerg Hammes
Lights and Effects: Stefan Medelnik

Credits

We want to thank Guenter Kraemer for his great Davtron M803 gauge, which is included. Michael B. Duerrschmidt for FSX testing and creating some FSX related things. Freddy Hundertmark for his work on AI-traffic files.

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June 2009
Thomas Röhl

Zeppelin NT in reality (abstract from Wikipedia)



History

The Zeppelin NT ("Neue Technologie", German for new technology) is a class of airships being manufactured since the 1990s by the German company Zeppelin Luftschifftechnik GmbH (ZLT) in Friedrichshafen. The initial model is the NT07. The company can be considered the successor of the companies founded by Ferdinand von Zeppelin which constructed and operated the very successful Zeppelin airships in the first third of the 20th century. There are, however, a number of notable differences between the Zeppelin NT and the dirigibles of those days, as well as between the Zeppelin NT and usual non-rigid airships known as blimps. The Zeppelin NT is classified as a semi-rigid airship.

The initial design study was prepared in 1989. The ZLT was founded as a spin-off of the Zeppelin company in September 1993. It began to construct a prototype in 1995. The prototype first took to the air in September 1997. On July 2, 2000, the centennial of the first Zeppelin flight, the prototype SN 01 was christened D-LZFN Friedrichshafen. Subsequently, it traveled some 3,600 km in test flights.

In 2001 the company began manufacturing the Zeppelin NT in series and began to exploit the airships commercially. The second ship SN 02 was christened D-LZZR Bodensee on August 10, 2001 and started to give joyrides five days later. By the end of that year, it had already transported 3222 passengers, a figure that rose to about 30,000 by November 2003.

The third Zeppelin NT SN 03 was designated D-LZZF and first flew in February 2003. The Friedrichshafen is intended to be used for training pilots, for special flights and for presentations. All further ships will be used commercially or sold. As a tribute to the days of Zeppelin mail, a number of mail-carrying flights are planned.

On March 2, 2004 the ZLT sold a Zeppelin NT for the first time; SN 02 was acquired by the Japanese Nippon Airship Corporation and was transferred in June 2004, and was to follow the historical route of the 1929 World Tour of the famous dirigible LZ127 "Graf Zeppelin". After problems with Russian authorities a special ship for huge parts from the Netherlands was chartered and the Zeppelin was shipped from Italy to Japan by sea. The company intends to use the airship mainly for joyrides and advertising.

Steve Fossett and Paul Stroeble set the current speed record for airships over a distance of one kilometer on Wednesday, October 27, 2004 in Friedrichshafen, Germany with a Zeppelin NT. The new world record was set to 111.8 km/h (69.5 mph or 60.4 knots), an improvement of 19 km/h.

Starting in late 2005 the prototype Zeppelin NT, D-LZFN Friedrichshafen, was based in Jwaneng, a diamond mining town in southern Botswana, where it conducted an airborne geophysical survey on behalf of De Beers Prospecting Botswana. The airship was moved from Amsterdam to Cape Town by ship and then flown to Gaborone where a Lockheed Martin full tensor gravity gradiometer was installed. This instrument, owned and operated by Bell Geospace, measures changes in the Earth's gravity field associated with geological density variations. The technology is based on accelerometers and the data quality is sensitive to the turbulence and motion usually associated with fixed wing aircraft installations. The airship, flying slowly at night in relatively cool calm air, provides a very stable and vibrationally quiet platform. The resulting data is capable of revealing the rather faint gravity signals associated with Kimberlite pipes buried under the Kalahari sands. This survey came to an end on 20 September 2007, when D-LZFN was irreparably damaged by a whirlwind while moored at its mast.

In January 2006 the Zeppelin Luftschifftechnik GmbH announced building a fourth Zeppelin NT07. NT07 #4 was optioned by California-based Airship Ventures in Spring 2007. The new airship completed its first flight on May 21, 2008. On June 26, 2008, ZLT announced that the FAA issued the type certificate for the Zeppelin NT 07, allowing the airship to fly legally in the United States. Prior to the trip to the USA, the airship, registered D-LZNT, operated sightseeing and pleasure flights over eastern London and the Thames Estuary from an airfield close to Upminster, in Essex, England, advertising "Stella Artois" beer and the DrinkAware campaign. These flights operated between July and September 2008. The airship arrived at the Port of Beaumont on or about

September 26, 2008. After spending three days tethered at the Southeast Texas Regional Airport, the airship flew cross-country to its base at Moffett Federal Airfield. Upon its arrival, the airship was given the U.S. registration N704LZ, and was christened "Eureka" (after the California state motto). Airship ventures began commercial operations in November 2008, and is currently offering flightseeing tours over the San Francisco and Monterey Bay areas, operating both out of Moffett Field, and Oakland Terminal.

Design

The Zeppelin NT airships constructed so far are 75 m long, with a volume of 8,225 m³. They are thus considerably smaller than the old Zeppelins, which reached a maximum volume of 200,000 m³. Furthermore, they are inflated exclusively with the non-flammable noble gas helium.

In standard operations with a maximum payload, the gas cells do not create enough buoyancy to make the whole ship "lighter-than-air." The negative buoyancy is overcome with engine power. The buoyancy can change when traveling with reduced payload and partially emptied fuel tanks, but usually the Zeppelin NT starts its journey with a net downward force of about 3,000 N (306 kg), and on long trips can end up lighter than air if a lot of fuel is used.

The Zeppelin NT is a semi-rigid airship. It is unlike both the original Zeppelins that had a rigid skeleton and non-rigid blimps. It has an internal triangular truss made of graphite-reinforced plastic and three longitudinal girders made of aluminium which connect the triangular elements along the length of the frame. This frame holds the engines, control car and the steering fins. Additionally, this structure is tightened with aramid cords. It weighs only about 1,000 kg (2,200 pounds).

Hull (Envelope)

Inside the hull of the historical Zeppelins the gas cells were separate entities. However the hull of the Zeppelin NT serves both as the hull and as the gas cell. It is made of a three-layered laminate: one gas-tight layer of Tedlar (PVF), one polyester fabric layer to provide stability and one polyurethane layer suitable for thermic welding that serves to connect the separate laminate panels. To preserve its outer form, a slight overpressure of about 5 millibar is maintained within the hull. As in blimps, this pressure is kept constant by using ballonets. The ballonets have a total volume of 2,000 m³.

Propulsion and steering

Three propeller engines of the type Textron Lycoming IO-360 with a power of 147 kW (200 hp) each provide the Zeppelin NT with excellent maneuverability. Two lateral engines, equipped with tilting propellers and usually aligned horizontally, can be turned 90° upward or 30° downward. The aft engine powers a pushing propeller that can be turned 90° downward, as well as a steering propeller directed to the side and working similarly to the lateral-thrust units of some ships. The three 200 PS (197 hp) engines use aviation gasoline (AvGas) as their fuel source.

Instead of four rudder and elevator fins, the Zeppelin NT uses only three, which saves weight. As a side effect, the loss of one fin can be compensated with the remaining two. The controls are implemented by fly-by-wire technology, with the pilot using a joystick to steer in three dimensions.

Flying capabilities

The design currently has a range of some 900 km (500 nautical miles) and reaches top speeds of 125 km/h (70 nautical mph or 78 mph). The standard cruising speed of 70 km/h for tourist flights can be attained using the rear propeller only. Standard operational altitude is 300 m (1000 ft), but up to 2,600 m (8,500 ft) is possible. Their maximum permitted takeoff weight is 10,690 kg, with a payload of 1,900 kg. The Zeppelin NT is able to take-off and land vertically. Only three helpers are required on the ground.

End