

上海磁悬浮

The Shanghai Maglev Route



游戏插件内容
A DLC for Train Simulator

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1. About the Shanghai Maglev

The Shanghai Maglev Train (or Shanghai Transrapid) is a maglev line that operates in Shanghai, China. It is the first commercially operated high-speed magnetic levitation line in the world.

The original plan to extend the maglev line to create the Beijing–Shanghai High-Speed Railway was eventually shelved in favour of conventional high-speed technology, leaving the existing 30km maglev line between Pudong International Airport and Longyang Road, Pudong. Construction of the SMT line began in March 1, 2001, and on 1 January 2004 it began test operations. The top operational speed of the train is 431 km/h, making it the world's fastest train in regular commercial service since its opening in April 2004. During a non-commercial test run on 12 November 2003, a maglev train achieved a Chinese record speed of 501 km/h. The Shanghai Maglev has a length of 153m, a width of 3.7m, a height of 4.2m and a two-class cabin, which accommodates 574 passengers.

Basic route information

Length of mainline : 29.8 km

Maximum line speed : 430 km/h

Technology : Electromagnetic suspension (EMS)

Completion date : 31, Dec, 2002

Operating hours : 06 : 45-21 : 40 (Longyang road station)

07 : 02-21 : 42 (Pudong airport station)

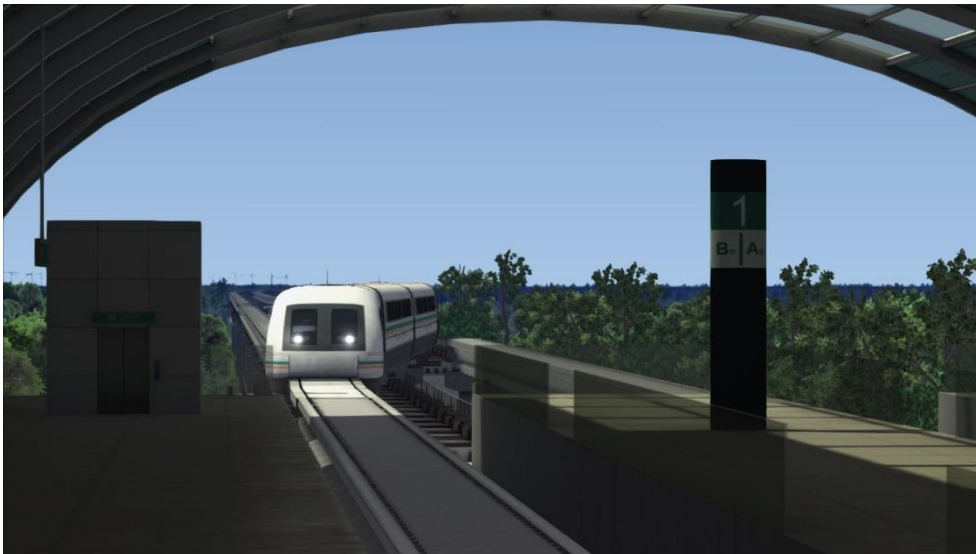
Number of stations: 2



2. Background information about EMS Technology

Electromagnetic suspension (EMS) is the magnetic levitation of an object achieved by constantly altering the strength of a magnetic field produced by electromagnets using a feedback loop. In most cases, the levitation effect is mostly due to permanent magnets as they don't have any power dissipation, with electromagnets only used to stabilize the effect.

In electromagnetic suspension systems (EMS), the train levitates above a steel rail while electromagnets, attached to the train, are oriented toward the rail from below. The system is typically arranged on a series of C-shaped arms, with the upper portion of the arm attached to the vehicle, and the lower inside edge containing the magnets. The rail is situated inside the C, between the upper and lower edges. Magnetic attraction varies inversely with the cube of distance, so minor changes in distance between the magnets and the rail produce greatly varying forces. These changes in force are dynamically unstable – a slight divergence from the optimum position tends to grow, requiring sophisticated feedback systems to maintain a constant distance from the track, approximately 15 millimeters.



The major advantage of suspended maglev systems is that they work at all speeds, unlike electrodynamic systems, which only work at a minimum speed of about 30 km/h. This eliminates the need for a separate low-speed suspension system, and can simplify track layout. The SMT is propelled by propulsion coils mounted in the track, in fact it is a kind of linear motor: the propulsion coils provide force to move the train forward or backward (brake). For more information about SMT you can visit here: <http://www.smtdc.com/en/>

3. Your train

3.1 Getting to know the cab



Left side of cab desk

- | | | | |
|----|-------------------------------|----|------------------------------|
| 1 | Emergency brake button | 2 | Startup button |
| 3 | Combined handle notch display | 4 | Reserve handle notch display |
| 5 | Traction current | 6 | Control voltage (v) |
| 7 | Onboard equipment voltage (v) | 8 | Head light switch |
| 9 | Cab light switch | 10 | Reading light switch |
| 11 | ATO startup button | 12 | ATO off button |

Right side of cab desk



- | | |
|------------------------------------|----------------------------------|
| 1 Combined power/brake handle | 2 Reverser handle |
| 3 Distance to next speed limit bar | 4 Next speed limit |
| 5 Distance to next speed limit | 6 Current speed limit |
| 7 Speedo meter | 8 Current speed |
| 9 Control voltage (v) | 10 Traction voltage (kv) |
| 11 Traction current (A) | 12 Onboard equipment voltage (v) |
| 13 Onboard equipment current (A) | |

3.2 Central DMI screen: additional information Chinese to English

The information below is what will be displayed on the central DMI screen, and mean the following:

紧急制动	Emergency brake display. When this shows, it means the emergency brake is applied. When the train is stopped this display will switch off.
ATO异常	ATO malfunction. This means ATO cannot be started.
ATO运行	ATO function is ON. This means the train is under fully automatic operation. To turn on ATO you must: 1. Move reverser handle to forward position; 2. Click ATO ON button on the desk. To turn it off, click the ATO OFF button.
车门开	Door open display. When this is displayed, it means the train doors are open. If the train arrives at a station while ATO is on, 5 seconds after doors are closed the ATO will start the train again.

3.3 Automatic train operation (ATO) and Automatic train protection (ATP)

This pack features fully workable ATO and ATP functions. ATP will help to avoid any dangerous situations and ATO will help free you from lots of cab tasks. When ATO is ON, it will operate the train automatically from start to stop. It can even reverse the train at Pudong Airport station.

When you apply the ATO, the train will run fully automatically according to the speed and signals assigned by the control center. When the train arrives at Longyang Road station or Pudong Airport station, it will stop at the correct position (especially at Longyang Road station, which has glass barriers on the platform). The train can even reverse itself automatically at Pudong airport station. When ATO is on and the train arrives at Pudong Airport station, 1) the train will start heading to the reverse point automatically 5 seconds after the doors close. 2) When stopped at the reverse point, shift to the other cab and start ATO again, and the train will move to the next platform and stop in the correct position (you may need to switch the junction).

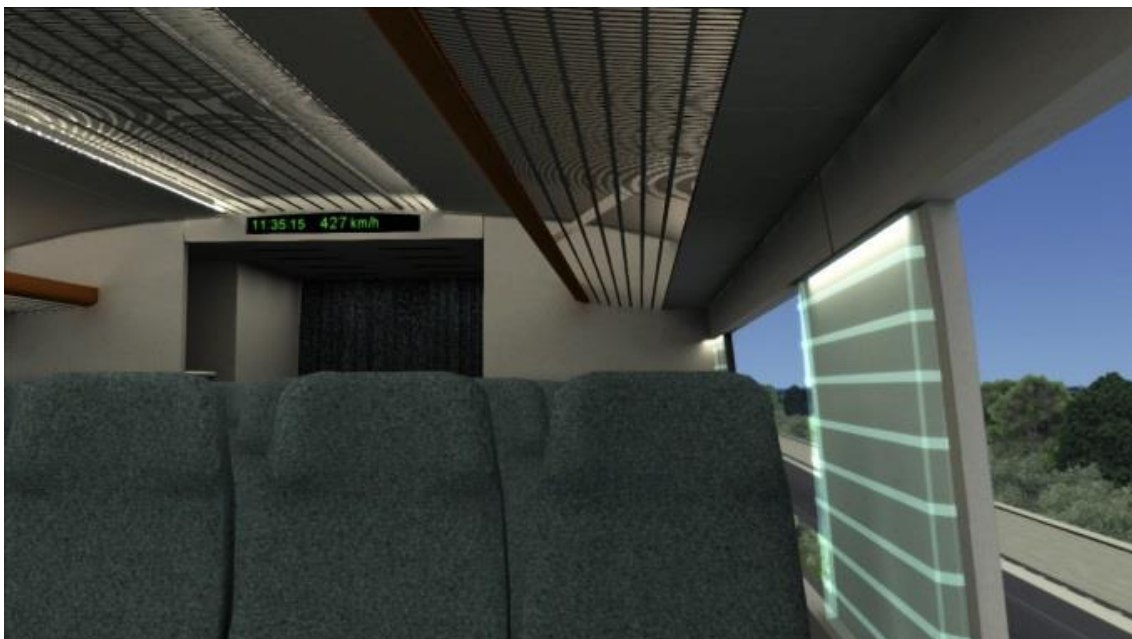
If you wish to start the ATO, please make sure: 1. Reverser handle is in FORWARD position: 2. Doors are closed (Especially when starting a scenario).

When ATO is on, a green box with Chinese text will display on the lower part of central DMI screen. You can turn off the ATO at any time by pressing the ATO OFF button on the desk or by using the hot key.



3.4 Cabin view

The SMT train also features a detailed passenger cabin view. You can press key 5 to enter the cabin. While inside the cabin, you can move around by pressing the left and right left arrow key (← or →). The cabin also includes a digital clock and speedometer. When ATO is on, you can relax in the cabin and watch the speedometer reach 430 km/h and the scenery flash past.



3.5 Hot key list

Key	Function	Key	Function
H	Headlight up	W	Reverser handle move forward
Shift+H	Headlight down	S	Reverser handle move backward
L	Cab light	A	Combined handle move forward
N	Reading light	D	Combined handle move backward
Z	Startup key	Y	ATO ON
X	ATO OFF	Backspace	Emergency brake button

3.6 Braking system

In order to slow down the train without any physical contact or airbrake system, the SMT train changes the direction of the electric current so it generates a counterforce from the magnetic propulsion system.

In Train Simulator, the train uses dynamic braking controlled by scripting to simulate this process. When travelling at over 400 km/h, even a slight movement of the brake handle will cause driving quality errors in-game, so please use the brake very carefully when driving the train manually at high speed.

3.7 Signaling

The SMT route does not have any color signals or any other tradition signaling system. It uses speed codes sent from the control center and processed by the on-board ATP/ATO system. If the route ahead is blocked and it is not possible to proceed, you will get a "0 speed limit" code on the central screen. You can press the Tab key to request permission to proceed.

4. About the scenarios

4.1 Career scenarios

In the following career scenarios, your suggested speed limit is 300 km/h.

1. Early Morning Train Round Trip

Start position: Depot

Terminal station: Pudong Airport station

Duration : 28 minutes

It's early in the morning and you're assigned to drive the first train to run between downtown and Pudong Airport. In this scenario it is recommended that you use the ATO system to reduce the work load.

2. The Advantage of ATO

Start position: Longyang Road station

Terminal station: Pudong Airport station

Duration : 15 minutes

ATO not only frees you from lots of cab work, but also improves efficiency of train operation, especially in bad weather. As SMT trains don't have wipers or a horn, ATO is your best friend on a day like today.

3. Parallel Operation

Start position: Longyang Road station

Terminal station: Longyang Road station

Duration : 45 minutes

There are usually two sets of trains running on this line. As moving the junction and reversing at Pudong Airport station will take some time, both trains are running shuttle services back and forth without switching lines. Today you will take train SMT002 on Track B for a round trip. You can turn on the ATO system but don't forget to turn it off before you open the passenger doors.

4. Last service of the day

Start position: Pudong Airport station

Terminal station: Depot

Duration : 35 minutes

This is the last train leaving Pudong Airport station. This train will stop first at Longyang Road station, then return to Pudong Airport station. Finally you must drive your train back to the depot.

5. A Foggy Morning

Start position: Pudong Airport station

Terminal station: Pudong Airport station

Duration : 25 minutes

This morning you have to face a new challenge. Visibility is poor and ATO is out, can you handle this?

6. Heavy rain, watch out!

Start position: Pudong Airport station

Terminal station: Depot

Duration : 35 minutes

The weather forecast said the first typhoon of the year is about to hit Shanghai. Though it's still far away, the periphery of the typhoon has already brought heavy rain to the city. Due to the bad weather, the last service of the day is almost an hour earlier than usual. You're driving the last train of the day: make a round trip from Pudong Airport station and then return to the depot.

4.2 Tutorial scenario

You can find the tutorial scenario under the Tutorial section in the Academy menu.

Introduction to the Shanghai Maglev

Start position: Longyang Road station

Terminal station: Pudong Airport station

Duration : 30 minutes

This scenario will teach you how to drive the SMT train and how to use the ATO system.

4.3 Quick Drive scenario

This route also features Quick Drive scenarios. You can select Quick Drive by clicking Quick Drive in the game menu:



5. Developer

Develop: Union Workshop

Publish: Dovetail Games

Special thanks: Beta testing team

3rd party team of Dovetail Games

For more DLC and game news please visit: www.railsimulator.com

For our website you can click: www.uws-trainsim.com

