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In 1976 Dr. Reiner Foerst founded our company. He was a simulation theorist with the at that time visionary idea of developing driving simulators to train novice drivers. Since then the Dr.-Ing. Reiner Foerst GmbH develops and produces driving simulators for traffic safety, driver training, promotion, research and rehabilitation.

We produce a variety of simulators which are true to their „real“ prototypes, robust, mobile, easily manageable, maintenance-free, modifiable, and upgradeable by means of software programmes.

Our standard truck and bus simulators are built with single-seated operator stands. They come with various types of sight-systems based on LCDs or projectors. Optionally, the simulator can be improved by propping it up on two over-square motion-supports patented by us which simulate G forces limited scope in a certain scope by moving length- and crosswise. The image generator is based on a fast-working personal computer with its own interface hardware. We developed a large variety of scenarios for crucial traffic situations, as well as educational computer instructions and evaluations. Additionally there is a control desk informing the instructor about the current educational level of each pupil and enabling the instructor to intervene.

Construction of the cabin, software, graphics, and drive engineering are subject to constant refinement. We are partners in various projects of the European Commission. Our products are sold worldwide.
Driving Simulators –
The New Dimension in Training Professional Drivers

With the new “Tutor” simulator a big step forward has been made by the Foerst GmbH to further diminish the gap between simulation and reality. The simulator comes with four different driving programmes (manoeuvring, hazard perception, eco-driving, and driver safety training) that help the trainees become acquainted step by step with the demands of real traffic.

The “Tutor” is an allrounder which can simulate rides in a semi-trailer truck, a tank truck, a bus, a light truck, a fire engine, as well as a drawbar-trailer combination. It has been developed especially to be used to train professional drivers according to the standards of EU-directive 2003/59/EG. Not many driving schools have such a large fleet of cars available as can be accessed via the menu of the Foerst simulators so this new dimension of training promises excess training quality and more fun for the trainees.

Vehicle classes are easily chosen on the menu. Due to modern high definition computer graphics reality and virtual reality almost melt into one. This feeling of authenticity is increased by mounting original truck devices and, optionally, by mounting a moving cabin that not only reacts to different centrifugal or acceleration forces but also to different types of pavement. A ride on the “Tutor” not only offers the chance to gain experience in driving on motorways, on country roads, or on city streets but can also provide you with the adventurous experience of steering a semi-trailer truck on small high-mountain roads. You can also choose between automatic and manual transmission, you can determine weight and load as well as weather conditions. If required you can additionally activate driver backup systems, i.e. “Lane Departure Warning” (LDW), “Anti-Lock Braking System” (ABS), or “Adaptive Cruising Control” (ACC).

In addition to a windscreen visibility close to reality there are six rear-view mirrors at the driver’s disposal assisting him in integrating into live traffic. While driving an interac-
tive diagram can be switched on which informs about rpm, speed, consumption, pedal positions, and torque. Thus the instructor is immediately informed as soon as the trainee steps on the brake, or about how much fuel is used up at a certain driving style.

After the lesson instructor and trainee can review the lesson via replay sequences, including the diagram. In addition to the driver’s view you can review the lesson from a birds-eye perspective. Regarding fitness for purpose, the simulator has thus by far outdistanced reality.
The driver trains eco-driving, hazard perception, safe driving, and manoeuvring. You can choose between drawbar-trailer combinations, semi-trailer trucks, buses and tank trucks, as well as different loadings.

For debriefing, instructor and pupils can watch the whole drive from different viewpoints via replay being shown again all important parameters.
“Changing gears in good time gets you farther” is the motto of intelligent eco-driving. Energy-efficient, environmentally sensible, and relaxed driving may substantially reduce a truck’s petrol consumption, which is, at the same time, environmentally sensible as your CO₂ emission will also be reduced. In addition, well trained and proactive driving reduces stress for the driver and wear on the vehicle while increasing traffic safety.

Foerst truck simulators can be equipped with special software modules beating the traditional possibilities for eco-driving in real vehicles by far in many points.

The eco-driving software works with shell scheme and time diagrams which inform the instructor about selected gear, operating point of the motor, number of gearshifts, rpm, speed, consumption and their respective average. At the end of the drive the instructor is given a detailed evaluation of the drive, as well as information on the particular petrol consumption in terms of an “eco”-classification figure. Using the replay function the driving sequence can be reviewed and the driver’s actions and other specific data can be read off the diagram. Thus, the drive can be analysed step by step together with the trainee.

Additional information:

**Brief description:**
The driver is offered various routes which he then has to master in the most economic manner. Driving takes about 5 min. per route. After that, the instructor is able to give hints on how to enhance his/her driving. At last, the “eco”-classification figure informs about the trainee’s driving qualities. Here, the average speed is related to the average petrol consumption.

**Surroundings:**
City, suburb, country road, motorway, mountain road

**Vehicle types:**
Semi-trailer truck, drawbar-trailer combination, tank truck, emergency vehicle, bus and light truck

**Evaluation tools:**
Replay, eco-diagram, shell scheme, eco-classification figure

**Density of traffic:**
Adjustable
You can not only choose between various types of vehicles but also determine loading, weight, traffic density, and environment, i.e. city, suburb, country road, motorway, mountain road, so the simulated eco training gets as close to real driving as possible.
Traffic flow in the city, on motorways, and in the country is first and foremost one thing: unpredictable. Concentration and proactive driving help truck drivers identify and cope with dangerous situations. With its “hazard perception” software the Foerst company has created the opportunity to expose trainees to precarious situations without in fact endangering them.

Our software allows the instructor to confront the trainee with a wide range of dangerous situations while driving through different landscapes, i.e. a crossing with vehicles invisible for the driver, a vehicle leaving a parking space and turning into the street, a child running into the street, or a bicyclist who has to be overtaken.

Using the replay mode the instructor is able to replay the whole sequence after the drive and to freeze crucial situations to show the trainee at which point he should have reacted and that he could have foreseen a dangerous situation by taking a look in one of the rear-view mirrors.

Additional information:

**Scenarios:**
- Crossings
- Vehicle leaving parking space
- Pedestrians / deer crossing
- Overtaking
- Traffic jam in fog / pulling out into traffic
- Brake failure
- Erratic behaviour of other motorists/cyclists
- Tyre blowout

**Environment:**
- City, suburb, country road, motorway, mountains

**Vehicle types:**
- Semi-trailer truck, drawbar-trailer combination, tank truck, emergency vehicle, bus, light truck

**Evaluation tools:**
- Replay mode, diagrams

**Weather conditions:**
- Fair weather, rain, fog, snow, darkness
Evaluation diagrams also offer information about braking pressure and brake timing, in addition you can tell, if the correct sequence of actions regarding braking and gear shifting has been observed. In this manner, the trainee becomes more aware of possible dangers and can be motivated to be a proactive and careful driver right from the start.
Manoeuvring – Practice Makes Perfect

Driving a truck for hours gives every trainee a hard time, especially if steering a semi-trailer truck or a drawbar-trailer it takes hours to manoeuvre the vehicle backwards or through a bottleneck.

On a Foerst simulator and guided by its software module “Manoeuvring” the trainee is able to learn how to cope with difficult situations in a playful manner, constantly monitored by the instructor.

Under conditions true to reality regarding the physical performance of the vehicle the trainee learns how to manoeuvre a semi-trailer truck, a tank truck, a light truck, a coach, an emergency vehicle, or even a drawbar-trailer combination. When turning on the parcours or via a side street, when reversing in a circle, or navigating a slalom course the trainee gets a good feeling regarding size and performance of the vehicle. Relevant figures as there are steering wheel angle and G forces are shown in a diagram.

The software also allows the instructor to enlarge in detail upon the difficulties of reverse driving.

Additional information:

**Scenarios:**
- Narrow crossings
- Bottlenecks
- Reverse parking
- Parcours
- Turning using side streets
- Reverse a section of a street

**Environment:**
- City, country road, shunting site

**Vehicle types:**
- Semi-trailer truck, drawbar-trailer combination, tank truck, emergency vehicle, bus, light truck

**Evaluation tools:**
- Replay mode, diagrams
On the simulator, the trainee gets his bearings utilising six different rear view mirrors. Everything the trainee sees or should have seen in these mirrors can be reviewed by the instructor after the drive via replay mode to show crucial situations and discuss these.

Neither reverse driving nor manoeuvring a 40-ton truck through a bottleneck is scary anymore but great fun.
Safety Training – Practice Helps You Keep a Clear Head

Besides imparting knowledge about physical laws modern driver training is particularly about handling a vehicle in exceptional situations.

To enable drivers to keep a clear head and maintain a consistent behaviour in all kinds of situations the Foerst company has developed a software system which transfers various aspects found on a closed course to the simulator. The instructor can now choose between seven possible scenarios confronting the trainee with obstacles expecting him to carry out evasive brake application, lane changes, or evasion manoeuvres.

As in reality, in the simulator, too, centrifugal forces may cause a virtual vehicle to topple over if a manoeuvre is not planned well. The menu not only allows to choose from different types of vehicles, or their gross load weight, but also from different pavement conditions (dry, wet, snow-covered), speed, incline, balance point, and ABS condition.

Additional information:

Scenarios:
- Braking distance
- Evasive manoeuvre
- Kerbside
- Uphill-driving
- Lane change
- Evasive brake application

Environment:
- City, suburb, country road, motorway, mountains

Vehicle types:
- Semi-trailer truck, drawbar-trailer combination, tank truck, emergency vehicle, bus, light truck

Evaluation tools:
- Replay mode, diagrams

Pavement:
- Dry, wet, slippery

[Image of graphs and data]

Average consumption 46.19 l/100km
As with the other modules, a diagram can be switched on to inform about all relevant figures.
The simulator cabin is a sturdy construction equipped with genuine MAN controls, a big steering wheel, and a Mercedes shift lever unit. The number of gears can be programmed in advance. The dashboard has been replaced by a 15” screen which can be adjusted to every type of vehicle. The seat can be adjusted with a triple-degree-of-freedom system. Based on this cabin, different types of simulators are produced coming with various forms of sight and/or moving systems as well as optional attachments.
Type „Tutor“ – F12HF-3L40
Mobile and Cost Effective

Technical data

- Total width: 2.45 m
- Length: 1.60 m
- Height: 1.66 m
- Transportation width: 0.79 m
- Transportation width: 3.00 x 2.00 m
- Power supply: 230 V, 4.5 A
- Cabin weight: 160 kg
- Weight of viewing system: 100 kg
- Virtual visibility angle: 180°
- Sight system: 3 x 40” LCD flat screens
- Audio: dual channel speaker system, headset socket

Due to the small amount of space required, this simulator is good for use in a training classroom, also to support theory lessons.
Type „Tutor“ – F12HF-3AO88
A Simulator with a Large Projection System

Technical data
Total width: 3.80 m
Length: 2.45 m
Height: 2.35 m
Transportation width: 0.79 m
Transportation width: 4.00 x 2.50 m
Power supply: 230 V, 6 A
Cabin weight: 160 kg
Weight of viewing system: 270 kg
Virtual visibility angle: 180°
Sight system: 3 LCD projection screens with a 1.80 m x 1.39 m surface at a diagonale of 88”
Audio: dual channel speaker system, headset socket
Type „Tutor“ – F12HF-3A88-NRB
The All-In Solution

<table>
<thead>
<tr>
<th>Technical data</th>
<th></th>
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<tr>
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<td>Length:</td>
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<tr>
<td>Audio:</td>
<td>dual channel speaker system, headset socket</td>
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The simulator is equipped with a pitching and a rolling stand as well as a jolting device to simulate acceleration forces and pavement irregularities.
Special Types – Custom-Made Solutions

Adding extra hard- and software, all Foerst simulators can be adjusted to fit the individual requirements of the customer.

There are nearly no limits to the possibilities of custom-made simulator types and to their build.

For further information, please contact our specialists at Foerst GmbH any time.
All simulators of the Foerst company stand out due to their ease of use. This high standard can even be upgraded by introducing an external control desk offering a whole series of special functions.

The additional functions of the external panel, which is composed of an extra pc, interfaces, and two 19" screens, enable the instructor to cause various incidents to happen during a lesson. Interactively, he can, for example, change the weather or let a person jump out into the street to teach his trainees to expect the unexpected.

Furthermore, the large size of the desktop enables the instructor to access information about the simulation while preparing a drive or evaluating lessons. Each screen covers several functions: the left-hand screen allows the instructor to follow the actions of the trainee, to provoke events, to change perspectives, to log sequences, and to watch replays, while the right-hand screen covers administrative tasks. It shows data and results of the trainee’s progress, and can be used to prepare new scenario sequences for future lessons.