



A REAL TRAINING TOOL

The simulator enables riding expertise and procedures, from the most simple to the most complex, to be learned. The content of information is organised in a progressive manner which covers all of the objectives of the motorbike licence training course (learner's book).

It is divided into four stages:

- ✓ **Motorbike knowledge:** The exercises of this stage take place on the manoeuvring area. The main objective is to master the controls of the vehicle. This stage corresponds in part to stage number one "Controlling the motorbike at slow speed without traffic" of the learner's book.
- ✓ **Motorbike control:** All the exercises of this stage take place on the track. The main objective is to lead the learner to control their motorbike and ride it at a normal speed, to be capable of stopping in any situation (emergency stop, at traffic lights, etc), and to maintain their trajectory in a bend. This stage corresponds in part to stage number two "Controlling the motorbike at normal speed without traffic" of the learner's book.



- ✓ **Advanced rider training:** The exercises of this stage take place on the complete road circuit (with signalling) with or without traffic. This stage corresponds in part to stages number three "Choosing road position, crossing intersection, or changing direction" and number four "Riding in normal conditions on a road and in a built up area" of the learner's book.
- ✓ **Risk awareness:** The exercises of this stage make the rider aware in advance and develop their vigilance in order to identify and manage potentially dangerous situations as early as possible. This stage corresponds in part to stage five "Understanding situations presenting specific difficulties" of the learner's book.



OPTIONS

- ✓ Instructor station, networking with several simulators
- ✓ Police and Military.

REFERENCES

More than 6800 ECA Faros car and truck simulators supplied to driving schools, training centres, research centres, and armed forces around the world.

The simulators are used within the framework of initial driver training, advanced training, and road risk awareness training.

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www.ecafaros.com

ECA FAROS

Rue Blaise Pascal • Parc Pégase • 22300 Lannion • FRANCE

Phone: +33 2 96 48 46 47 • Fax: +33 2 96 48 08 24 • e.mail: eca-faros@ecagroup.com • web: www.ecafaros.com

eca faros feb 2011

EF-BIKE

High end motorbike simulator



A Simulator with a motion platform

A realistic riding environment

A real training tool

The motorbike riding simulator is part of the range of light vehicle and heavy goods vehicle driving simulators developed by **ECA FAROS**. It is manufactured according to the same principles:

- ✓ Creation of a realistic riding environment with the use of real motorbike equipment.
- ✓ Educational content based on accredited Training Programme, motorbike licence.

A REALISTIC RIDING ENVIRONMENT

Main characteristics of the motorbike simulator:

The motorbike simulator is made up of three sections:

- ✓ The chassis, with its real motorbike parts assembled on a motion platform (thus creating pitch and roll movements).
- ✓ A computing cabinet containing the computer (or several depending on the configuration chosen) and electrical safety elements.
- ✓ The visuals, made up of one to three screens depending on the configuration chosen.



Replication of riding elements:

Ergonomics:

- ✓ All the equipment, pedals, and all handlebar controls have the same functions as on the real vehicle and are linked to the calculator.
- ✓ Specific controls, like sirens, and flashing lights are installed on Police and Military models.



Forces feedback:

- ✓ The main vehicle controls are linked to the calculator via sensors and have systems enabling forces to be replicated.
- ✓ The handlebars are fitted with an electric motor controlled by the software.



Replication of movements:

The motion platform replicates roll movements, tipping from left to right to give perception of entering and leaving a bend, and pitch, moving backwards and forwards to give perception of acceleration and braking.

Rider immersion:

The rider must perceive the virtual world that makes up his riding environment as being as realistic as possible. A high-performance graphics system thus proposes a rich and realistic 3-D environment (town, country road, etc) under various meteorological conditions (day, night, rain, fog). The images are displayed on one or several 42-inch monitors, the eye-screen distance being 180 cm.

- ✓ Field of view reproduced: 40° x 22° for the single screen and 120° x 22° for the three screens.
- ✓ Exterior rear-view generated by embedded images at the bottom of the frontal image which can be adjusted by the controller.
- ✓ Extension of field of view laterally, and towards the rear (blind spots) with the trackball.
- ✓ Spatial audio system give a realistic sound environment feedback:
- ✓ Own engine noise (linked to engine speed, road speed), audible warning, gearbox noises.
- ✓ Surrounding noises, other vehicles.

The sound system also includes extensive use of voice messages of great educational importance (giving information, instructions, correction messages, etc).



Advanced vehicle dynamics model:

Simulated vehicle model:

- ✓ Modelling of controls and vehicle devices (starter, engine, front and rear brakes, gear selection lever, handlebar, etc).
- ✓ Modelling of vehicle dynamics; Acceleration curve, braking, speed, engine torque.
- ✓ Attitude of the vehicle depending on ground relief and type, tyre pressure, vehicle friction in the air, position and weight of the rider, road holding (wet road, dry road).

Steering modelling:

The simulator integrates complete management of counter steering, with specific treatment at low speeds to enable the rider to carry out direct steering in this area:

- ✓ At low speed, the rider can steer the vehicle by turning the handle bars in the direction of the bend desired (direct steering).
- ✓ From 20 KMH the rider must use counter steering (counter steering), that is to say pressing on the handlebar on the side of the bend desired.

Environment model:

- ✓ Representation of a road circuit as well as its topology
- ✓ Vertical and horizontal signalling (signs, traffic lights, road markings, etc).
- ✓ Representation of traffic, "intelligent" behaviour of other vehicles (cars, trucks, motorbikes), pedestrians and animals.
- ✓ Configurable light and weather conditions: rain, fog, daily, dawn/dusk, night.
- ✓ Replication of sounds.

Road circuit:

The road circuit has four independent sections:

- ✓ A manoeuvring area.
- ✓ A large track.
- ✓ A town, its ring road, and its residential zone.

