



Report on the Driving Simulator at Horvath Driving School

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An Assessment of the Rozendom driving simulator at Horvath Driving School

Background

On Friday 10th October 2008 both myself, and Mr Philip Scott visited the Horvath School of Motoring in Hungary. The purpose of our visit was to learn about driving tuition in Hungary and to evaluate the driving simulator which had just been installed there. Having researched and visited driving simulators world wide in my role as Research Fellow in Automotive Human Factors, my role in this instance was predominantly to provide a technical evaluation, whereas Mr Scott, with his background/expertise as training officer for the Sunderland Group of Advanced Motorists (affiliated to The Institute of Advanced Motorists, the UKs largest organisation promoting safe driving), was to drive the simulator then provide an evaluation of the general driving experience and the usefulness of the simulator as a tool for driver training.

Technical evaluation

The Rozendom driving simulator at the Horvath Driving School represents the state of the art in driver training. It is a low cost driver training simulator which, in fact, compares very favourably, in terms of fidelity, with the high end/high cost research simulators that I have visited (e.g. Nissan, Japan; Jilin University, China; VTI Sweden; University of Leeds, UK; TRL, UK). Such high end/high cost simulators, in my opinion, offer nothing additional to the Rozendom driving simulator in terms of fidelity and the driving experience, despite the fact that they have motion base and are operated from a real car body. The Rozendom driving simulator, therefore, represents excellent value for money. In fact, the broad selection of driving scenarios included in the Rozendom simulator (e.g. basic car handling; ECO drive; hazard perception; defensive driving; different weather conditions; drunk driving; driving by night) (which can be expanded if so required), combined with the quality of the graphics and excellent functionality, deliver a superior driving experience in terms of immersiveness, compared to that experienced in many of the high end/high cost driving simulators.

Another advantage of the Rozendom system is its incredibly low (virtually 0) rates of simulator sickness. Many of the medium and low cost simulators available are renowned in simulation circles for their difficulties with high levels of simulator sickness and a general lack of technical refinement and data presentation. However this problem seems to have been virtually eliminated from the Rozendom system.

The Rozendom driving simulator, of course, has been specifically designed for driver training, rather than, simply, as a research tool. All data can be extrapolated for research purposes if required but the system has the added benefit of providing the driver and tutor with feedback on performance in the form of screen shot summaries, graphs, and print outs, which are presented in a very user friendly/easily understandable format.

There are also general advantages to using a driving simulator such as the Rozendom system in terms of effective, more efficient learning and environmental savings. For example, twenty minutes of simulated driving is said to be the equivalent of one hour of on-road training, one instructor can supervise parallel training in as many as four simulators, and there is a virtual instructor option. Furthermore, specific situations can be repeated allowing more targeted training. More use of simulators in driver training should be encouraged as this would help to reduce air pollution. Other benefits include less wear and tear on vehicles, and roads, as well as fewer vehicle repairs.

The Driving experience

The cockpit of the Rozendom driving simulator represents that of a real car. The Primary and secondary controls operate and feel the same as those of a real car when in use. The driving seat has a full range of adjustment and is comfortable.

Full tactile feedback of controls occurs upon start up and the car performs from park to rolling as a real car. Engine sound effects, including over revving, and turning indicator sounds are realistic. Gear shift movement through transmission is smooth.

There is very slight over steer on 90 degree bends but this is common in simulated driving. However, this has been kept to the bare minimum with the Rozendom system.

The driver's view of the road, including rear and side mirrors allows 360 degree visibility as in the real world. The simulated visual driving environment outside of the cockpit consists of very high quality graphics and there is no visible delay between control inputs and visual feedback on the screens.

Objects within the simulated environment, such as road signs, pedestrians etc. are clear and perform realistically. Climate control and weather conditions etc. are also very realistic and vehicle performance corresponds with any given weather conditions accordingly. In terms of the overall driving experience, this simulator is very immersive and it is the best that I have driven.

In my opinion, the Rozendom simulator is an ideal tool for driver training. Particularly for new drivers just beginning their lessons, drivers with lack of confidence requiring refresher lessons, and drivers returning for medical reasons or from extensive time out, as it provides a safe environment in which to become familiar with basic vehicle control before going out on the roads. Once vehicle control is mastered the Rozendom simulator also enables drivers to practice combining their responses to various external hazards with vehicle control skills, in a safe environment. Such practice in the simulator will reduce mental workload, resulting in spare processing capacity to cope with the various decisions required under time pressure once drivers go out into the real world. This, ultimately, will result in reduced risk of collision in on-road driving.

In my opinion, people who have not driven previously or are returning to driving should have at least two hours of tuition in the Rozendom simulator as standard. Furthermore, up to 40% of total tuition, spent on specific targeted practice in the simulator, would be appropriate for each driver to enhance and accelerate the learning process.