



## Standardized measurement and evaluation of whole-body vibration

The 'EVEC' is an **Easy** and **cost-effective:wireless** and **standardized** measurement of whole-body vibration !

*evec* was designed to facilitate the measurement and evaluation of whole-body vibration. *evec* offers advanced technology which can be learned easily and quickly, even by untrained users.



The seat sensor, including its integrated memory, is just placed on the driver's seat – without having to be mounted mechanically and without needing any disturbing cables. The sensor is activated and the measurement thus started with just a few operator steps. The necessary software is installed on a PDA or a notebook with Bluetooth interface. You need just a few settings – and your *evec* system is ready for use. The data recorded is also read from the seat sensor through Bluetooth. There are no annoying cables which might be damaged during the measurement. The driver does **NOT** have to do **ANYTHING**. The *evec* system automatically registers when the driver gets up and, complying with EN 14253, cuts off the peaks when the driver sits down too energetically.

This allows precise measurements of the load to which the driver is exposed through the effect of vibrations. Special data preparation is not necessary. Conforming to EU Directive 2002/44/EC, the *evec* software calculates the A(8) value of the daily exposure, no matter whether the measurement covered the full span of eight hours or whether evaluation is based on a shorter time period.

### Standardized measurement

Any measurement series may be subject to undesired effects which falsify the calculated day load, for example, if the driver gets up and sits down frequently. The intelligent triaxial sensor excludes all of these undesired effects from calculation. The *evec* system takes such exceptional loads as well as breaks into account and, conforming to EN 14253, automatically eliminates such peaks and breaks from calculation of the total load. This excludes any manipulation of the measurement on the driver's part.

### Benefits

- Easy-to-operate
- Short training period
- Automatic identification and elimination of undesired effects
- Automatic calculation of exposure time (ET) and daily exposure A(8)
- Direct access to measurement results through PDA or notebook / PC
- Excellent price-performance ratio

### Performance

#### Hardware

- *evec* seat pad according to ISO 10326 (in black) with integrated triaxial acceleration sensor
- Microcontroller for evaluating acceleration signals according to ISO 2631
- Algorithm for identifying and eliminating undesired effects
- Driver-seat contact sensor
- Wireless communication between sensor and PDA or Notebook / PC

### Standards met

- EU Directive 2002/44/EC of 25th February 2002, governing the protection of workers against risks arising from vibrations
- Decree of 6th March 2007, regulating the adoption of EU Directive 2002/44/EC
- ISO 2631 – Mechanical vibration and shock
- ISO 10326 – Mechanical vibration – Laboratory method for evaluating vehicle seat vibration
- ISO 8041 – Human response to vibration
- VDI 2057 – Human exposure to mechanical vibrations – Whole-body vibration



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# Wireless communication

## Software

- **evec** seat pad activated for measurement through Bluetooth®
- Measurement data downloaded through Bluetooth®
- Exposure values automatically calculated and displayed according to EU Directive 2002/44/EC
- Values displayed in three directions (x, y, z)
- Extrapolation of measurement data with reduced measurement times
- Storage of all relevant measurement data
- Printed report
- ASCII export of measurement data

## Scope of delivery

- The scope of delivery of the **evec** system for measuring whole-body vibration comprises the following components:
- **evec** seat pad with integrated sensor
- CD-ROM with software for PDA and notebook
- **evec** battery charger incl. batteries
- Plastic case with magnetic on-off switch
- Operating instructions in English
- **Optional**: PDA or notebook with pre-installed software

## Target groups

- Engineers, specialists and experts involved in safety at work, from public service and industrial sectors
- Companies from the logistics, forwarding and construction trades, bus and port operators, airports, trans-shipment centers
- Operators of all further motor vehicles, aircraft, rail vehicles and watercraft
- Users in the fields of mechanical engineering, agriculture, forestry, and building trade
- Measurement and development engineers
- Occupational health practitioners
- Experts from the fields of comfort analysis and evaluation



## Technical Specifications

Standards met	ISO 2631, ISO 10326, ISO 8041, VDI 2057, EN 14253, ISO 10326
Frequency evaluations according to ISO 2631	Wd for x- and y-directions, Wk for z-direction
Results display	A(8) value, exposure time (ET), acceleration values in 3 directions
Dynamics range	60 dB
Temperature range	-10° to +50° C
Shock limit	100G
Bluetooth® communication	Class 2
EMC	According to EN 55022 and EN61000-4-8/6/2/3
Battery runtime	> 20 hours
Storage capacity	For a measurement of 36 hours
Charging time	Approximately 2.5 hours
Dimensions (seat pad)	Diameter: 205 mm; height: 12 mm (conforming to ISO 10326-1)
Weight (seat pad)	350 grams

## Applications

The **evec** system is suitable for a very great number of applications. Every sedentary occupation involving the protection of working humans from undesired vibration requires the use of the **evec** system.

The **evec** system provides the ideal solution for measuring whole-body-vibration, whether relating to fork-lift truck drivers, long-haul truck drivers or horseback riders.

## Mobility without limits

**evec** seat pads are wireless devices that communicate through Bluetooth® serial connections.

The accompanying software to operate the **evec** seat pad can be installed on any computer device running Windows XP/Vista or Windows Mobile 5 equipped with a Bluetooth interface.

Suitable computer devices are PCs, Notebooks, PDAs, mobile/ cell phones with suitable input peripherals and other mobile devices complying with the above specifications.

To install **evec** software on a Windows Mobile 5 mobile device, both a connection with a Windows XP/Vista PC or Notebook and an operational recent release of Microsoft ActiveSync are needed.

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# To the Safety, Health and Environment Professional...

The issues faced every day by Health, Safety and Environmental professionals are vast and varied. At Castle, we have spent a lot of time developing products and services to make your life easier!

Castle Group Ltd are one of the leading international group specialists in technical safety, health and environment solutions. Whether you are in Industry, Construction, Local Authority or anywhere there are safety or environment issues, we are a resource you really could use. We can help with Noise, Vibration, Air sampling, Gas detection, Light and temperature and just about anything else that needs measuring. The following services show you how we can help

## FREE Health & Safety Training Seminars!

To get you off the ground, refresh your knowledge or just to get a taste, Castle is continually running FREE Safety, Health and Environmental seminars around the country. Covering subjects from Noise at Work, to COSHH and Audiometry, the list is ever growing, as are the locations. Check out our web site for the next seminar near you.



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## Castle Instruments

Dealing with many Safety, Health and Environmental issues may well mean you need access to a plethora of **equipment** and **instrumentation** to carry out measurements and assessments necessary for the job.

At Castle we can provide you with just about any of the equipment you might need. All our equipment comes with the **guarantee** of back-up and support you only get from a company with 40 years under its belt! Here are a few of the core products we can offer, but we can also source anything you may need!

Noise and Vibration Measurement Equipment  
Audiometers, Otoscopes and Booths  
Air-Sampling Pumps, Calibrators and Consumables  
Gas-Detection and Personal Monitors  
Emissions and Air Quality  
Light, Temperature, Humidity and Airflow

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## Castle Training Academy

Training is becoming an ever more important area of consideration to industry **professionals** and the Castle Training Academy is fulfilling the need for more and more companies every year. The Academy now offers **competence** training along with IOSH and CIEH **qualifications**. What is more, look out for our NEW City & Guilds provision. All courses come with professional **CPD** points and many are eligible for CITB and Train to Gain **grant funding**.

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## CastleRent

There are a number of **reasons** why rental may be the solution for you. You may only have a one-off use, a special contract, a limited budget or a need for supplementary products. In any case, our **flexible booking** system, next day a.m. delivery and open-pricing mean that you can address any of these issues without delay. For long-term contracts, such as construction projects, Castle Rent is also a **tax efficient** way to 'own' equipment. Finally, for peace of mind, what better way is there to try a product before deciding to buy it? We even give you money back if you do purchase!

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## Castle Care

Measurement instrumentation must be **regularly** calibrated to a traceable standard and this is certainly true for most health, Safety and Environmental monitoring equipment. At Castle, our team of **highly trained and experienced** technical staff can service and calibrate almost any type of monitoring equipment from Noise and Vibration meters to Thermometers to Scales. The Castle '**Premier Service**' includes menu pricing and a normal turnaround time within 5 days. What is more, we will evaluate any instrument and return it for **FREE** if you do not want to proceed.



### Castle premier service and calibration offers...

- Free Evaluation Service
- Clear and Simple Pricing
- UKAS Accreditation Available
- Large range of equipment calibrated
- 4 Levels of calibration available for most equipment
- Annual contract calibrations with up to 20% off

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## Castle Contracts

For companies with **multiple** pieces of **equipment**, there is also Castle's 'Contract Calibrations'; an annual scheme to take the hassle out of maintaining equipment certification. Castle will issue calibration **reminders**, collect your equipment if required and return it calibrated as soon as possible. This scheme also affords a **saving** of up to 20% on annual calibration charges.

[www.castle-care.com](http://www.castle-care.com)

## Castle Consultancy

Castle **experts** are waiting to help you. Because we have a **network** of consultants across the country, we are poised to **react** to your requirement. Not only can we normally provide a local service, but we can usually help right away if you need us to!

Whether you are limited for time, in need of further **expertise** or just want some **advice**, we can assist. We have provided a wide range of services to many top companies for projects large and small.

**Here are some of the services we can provide, but if it's not here, just ask!**

- Noise or Vibration risk assessments
- Building Acoustics
- COSHH compliance
- Environmental Impact Assessments
- Air Quality Monitoring
- Occupational Health Screening programmes

[www.castle-consultancy.com](http://www.castle-consultancy.com)

## Castle Online

You can access all our products and services online whenever you want, just go to [www.castlegroup.co.uk](http://www.castlegroup.co.uk) and you will find a **knowledgebase** packed full of useful facts and information. You will also find details of all our upcoming **FREE seminars** and training courses as well as product information on literally hundreds of health, safety and environmental items, which are available to purchase directly through a secure server. Among other things you will find:

- HS&E Measurement Products
- Books, Standards and Publications
- HS&E CD's DVD's
- Stopwatches and Timers
- Scales and Distance Measurement
- Water Testers

You will also find our shop on ebay of all places - <http://stores.ebay.co.uk/Castle-Group-Safety> or just go onto ebay and type Castle Group Safety in the shops section.

## Who are Castle

For 40 years, Castle has been driving forward with product and service innovation. For a number of the early years, the company focussed on the development of sound and vibration measuring equipment. This was then progressed by adding training courses, rental and consultancy eventually leading to the Castle of today, which is helping many customers deal with a vast range of health, safety and environmental issues in a variety of ways. The future is a very exciting place at Castle and we are working on many new initiatives with our customers firmly in mind!