

# Reactec Analytics Platform

*Wearable & online technology to personalise monitoring and develop effective risk reduction activities.*  
*Onsite & mobile worker solutions*



Supports the Control of Vibration at Work regulations 2005 & HSE compliance

**REACTEC**

INFORM : PROTECT : DEPLOY

Inform, protect & deploy resources and assets to effectively manage HAVS risks

## Ground-breaking system to more easily and accurately assess and mitigate vibration risk.

Assessing the risk from exposure to HAV requires a determination of time on the tool and the vibration magnitude of the tool. Determining in particular the vibration magnitude of the tool in real tool field use is not straight forward.

A tool's vibration magnitude can fluctuate greatly even during a single days tool use. The causes of these fluctuations are numerous such as tool condition, accessory condition, tool application and operator skill. The established method for measuring a tool's vibration magnitude defined by standards ISO 5349 and ISO 8041 is expensive, intrusive and not suited for everyday use.

Reactec developed a novel wearable HAV exposure monitoring system to ease the assessment of HAV exposure risk in everyday use, with the objective of helping employers reduce the risk faced by their employees of developing Hand Arm Vibration Syndrome.

The Institute of Occupational Medicine (IOM) was requested by Reactec to conduct an independent review of Reactec's HAVwear system and determine if the data it gathers can be used:

1. to inform a suitable and sufficient risk assessment;
2. to develop risk reduction control measures for HAVS.

The IOM review concluded that data gathered by the HAVwear system provides a useful source of information to inform a suitable and sufficient risk assessment. Also that data gathered on a regular basis can inform the development of risk reduction control measures and can be used to identify trends in risk reduction as part of a risk management program.

The IOM is also of the view that, as the HAVwear system assesses vibration exposure during the entire use of the tool, it may therefore be more accurate than the use of trigger times and manufacturer's data or other data sources compiled for a limited range of tool activity.

Reactec believe, due to the high level of variability of exposure, the HAVwear's unique information can help employers obtain a more representative assessment of exposure to further reduce risk with evidence-based derived controls.



### Types of HAVwear risk data

The report was a study of the HAVwear system SEP data. HAVwear collects two types of assessment data to be viewed online:

HAVwear uses a tool's pre-defined vibration magnitude and length of time the tool is in use to calculate exposure points in accordance with The Control of Vibration at Work Regulations 2005 and in compliance with Health & Safety Executive (HSE) guidance.

**Reactec name this type of exposure points as "Tool Exposure Points" (TEP).**

HAVwear also determines the vibration transmitted to the tool wearer's wrist and mathematically corrects for the energy loss between the wrist and the tool grip point. The HAVwear uses this determined vibration magnitude and the length of time the tool is in use to calculate exposure points relating to real-time vibration exposure experienced by the wearer.

**Reactec name this type of exposure points as "Sensed Exposure Points" (SEP).**

The IOM opens the door to more efficient and effective assessments of HAV exposure risk for employers who have struggled with the complex topic of what is a suitable risk assessment when dealing with a broad spectrum of applications for a wide range of versatile power tools.

## Improves worker protection

- Personal & constant exposure monitoring increases workforce awareness & safety.
- Greater accuracy of exposure monitoring supports long-term health management.
- Real-time vibration monitoring to identify unexpected exposure risk due to poor tool use or performance.
- Supervisor rapid intervention with field mobile App, automated emailed reports & alerts.



## HAVWEAR display & alerts

Latest tool used  
Last 4 characters of tool  
model number.

HSE points  
Vibration exposure points

Operator initials  
First name initial and first three  
characters of last name

Exposure action values  
Indicates exposure  
thresholds reached



The HAVWEAR  
beeps and  
vibrates to alert  
the operator

Below  
action  
value

EAV exceeded  
Split into 3 equal sections to  
indicate incremental exposure

ELV  
exceeded

2 sec.  
alert

5 sec.  
alert

10 sec.  
alert

20 sec.  
alert

## Data driven controls to reduce HAVS exposure ALARP

- Supports behavioural change and helps involves all duty holders
- Measure the effectiveness of controls to aid design changes.
- More accurate assessment of exposure.
- Unique information to help deploy the most effective measure of controls.



## Why constant monitoring?

Without accurate knowledge of operator daily exposure, the likelihood of safely applying controls to keep HAVs exposure below required levels is extremely low. This is due to the unpredictability of most work processes across sectors from landscaping to engineering.

It is also widely accepted that manual assessments of exposure in the workplace, following regulations, will have a high level of uncertainty. This can influence actions to reduce risk as well as assessing their effectiveness at a later date.

## Reactec Analytics Reports

The Analytics online reports are easy to use and help companies develop more effective controls to reduce HAVs exposure risk. Fully hosted by Reactec employers can view reports online or receive them automatically by email. Alerts can also be set to inform managers of threshold breaches.

The reports include individual worker exposure and related tool use to pinpoint exposure hot spots. Also over the longer term the Reactec Analytics Platform can be used to manage the exposure of the whole works force and so impact positively on health management.

### Reduce risk ALARP with evidence-based solutions

#### Alternative work methods

The reports more accurately identify areas of risk and where to look for alternative work methods to design out risks.

#### Equipment selection

Tool usage reports highlight the most suitable equipment for tasks. Compare tool vibration magnitudes in the field to help select the lowest vibration tools that are suitable and can do the work efficiently.

#### Maintenance & purchasing policy for replacing old plant

View how long tools have really been used. This can help maintenance scheduling, plan replacements and identify poor tool use. Also monitor actual tool vibration to predict tool failure or poor use.

#### Work schedules

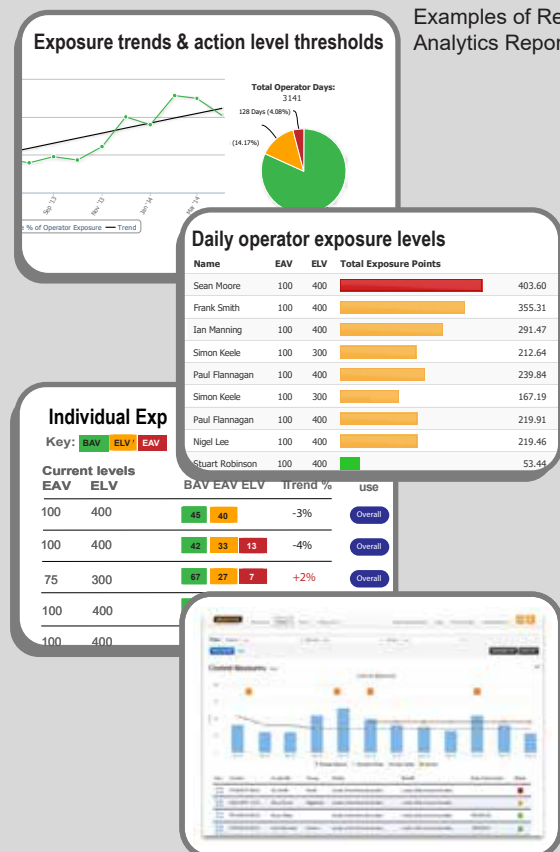
A clearer understanding of tool use and related exposure identify individuals over exposed and re-structure of work rotas across projects, departments and working groups.

#### Measure effectiveness of controls

Accurate and continuous monitoring is imperative to risk assess, deploy and measure the effectiveness of controls.

Managers can add and track the effectiveness of HAV control measures against targets plus log intervention notes. This control measures management service provides greater analysis of risk reduction activities and a company's set objectives against actual exposure risk.

Examples of Reactec Analytics Reports



## Robust defence against civil litigation

- Continuous monitoring provides conclusive exposure records.
- 1 click download of reports reduces preparation time and paper work.
- Auditable, accurate & tamper data provides a more robust defence.
- Reduced risk helps secure lowest insurance premiums.





# An independent report by the IOM on HAVwear

The purpose of the IOM report is to study the suitability of the vibration magnitude data determined by HAVwear and whether the resulting Sensed Exposure Points (SEP) data is appropriate as a Risk Assessment / Risk management tool.

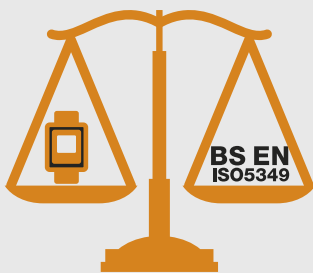
**1167** ANALYSED TESTS  
**477** INDEPENDENT TESTS  
**63** TOOLS



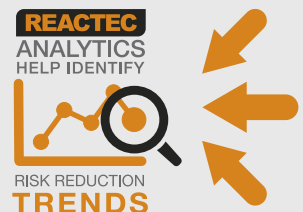
**WORK ENVIRONMENTS INCLUDED IN THE STUDY**  
 GROUNDS MAINTENANCE  
 ROAD MANAGEMENT  
 METAL WORK



**HAVWEAR** SYSTEM HAS ADVANTAGES OVER CONVENTIONAL MEANS OF VIBRATION MAGNITUDE MEASUREMENTS



**CORRELATIONS BETWEEN HAVWEAR AND BS EN ISO5349**  
 COMPLIANT MEASUREMENTS GENERALLY STRONG = DATA SUITABLE FOR A RISK ASSESSMENT AND RISK MANAGEMENT



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INSTITUTE OF OCCUPATIONAL MEDICINE (IOM) IS AN INDEPENDENT ORGANISATION THAT HAS PUBLISHED OVER 1,000 SCIENTIFIC PAPERS AND REPORTS ON OCCUPATIONAL AND ENVIRONMENTAL HEALTH, WORKPLACE HYGIENE AND RISK.

**10%**  
of workers

Hand Arm Vibration Syndrome (HAVS)

Dose-response data indicates that "10% of individuals will have finger blanching symptoms after 12 years if exposed at the action value of 2.5m<sup>2</sup> A(8) [100 HSE exposure points] or after 6 years if exposed at the limit value of 5m<sup>2</sup> A(8) [400 HSE exposure points]".

"Exposure below the Action Value cannot be considered safe..." (HSE)

Any level of vibration exposure is unsafe so deploying controls as robustly as possible no matter the level of risk is essential. The Reactec Analytics Platform will support reduction activity to make what was once difficult or inaccurate, reasonable and practical.

# How it works

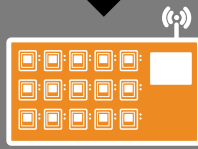
## Inform & protect

At the start of a shift each an operator signs out a personalised HAVwear which informs them of their exposure points and action level thresholds.



## Collect

At the end of a shift the operator returns their HAVWEAR to a docking station to recharge and transmit data.



## Reduce

Analytics online reports help companies develop more effective controls to reduce HAVS exposure risk. The reports include individual worker exposure and related tool use to pinpoint the source of exposure.



## Manage

The Reactec mobile App monitors real-time work situations. so team leaders and employees responsible for worker welfare can identify and address exposure risks on the ground, and not later.



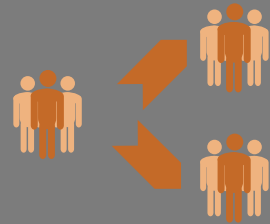
## Report

Managers can add and track the effectiveness of HAV control measures against targets plus log intervention notes.



## Share

Online access to data ensures all duty holders are involved in addressing the risk to employees of HAVS. Securely hosted by Reactec, companies can centrally manage employee access to specific reports.



## Testimonials

“Continuous digital monitoring goes beyond the directive and establishes a useable management tool to raise awareness and educate tool users”.

Morgan Sindall

We have been able to apply resources and measures more effectively to address our vibration risk”.

Murphy Group

“Daily monitoring has provided robust exposure data to support the defence of employee litigation of HAVS exposure on recent claims where claimant payments have been considerably reduced”.

Stirling Council

“Safety has increased and also productivity – a double win”.

Wilmott Dixon

“Overall we have already seen a dramatic drop in exposure since we deployed the Reactec Analytics Platform. It made tangible an invisible risk and helped us immediately refine and better design our measure of controls”.

Sir Robert McAlpine

“...invaluable both to our employees as individuals, in terms of their health and wellbeing and to Skanska from a business operations perspective”.

Skanska

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Reactec Ltd, Vantage Point, 3 Cultins Road, Edinburgh EH11 4DF  
Tel: 0131 221 0930 Email: info@reactec.com Web: www.reactec.com