Operator fatigue is responsible for significant injuries and losses to the Australian mining industry each year. In the absence of appropriate fatigue strategies and technologies, this problem will only be exacerbated by the combination of an aging workforce and ever-increasing demands on operators to achieve production quota. A number of commercial products have been developed over the past decade to tackle the operator fatigue problem. The majority of these uses either eye/head behaviour or operator response time to determine the level of fatigue. A limitation common to these technologies is the inability to cope with driver-to-driver variations, which results from the fact that they infer fatigue levels based on individuals’ response/behaviour rather than the direct, physiological measurement of fatigue.

EdanSafe has developed a fatigue monitoring system that overcomes these limitations. The SmartCap, a baseball cap containing sophisticated sensors concealed in the cap lining, uses an operator’s brain wave (EEG) information to calculate a measure of drowsiness, which is wirelessly communicated to a display in-cab. This has been made possible by the development of small sensors capable of reading EEG through hair, without the need for any scalp preparation. With the look and feel of a typical baseball cap, the SmartCap overcomes the operator acceptance problems experienced by sites that in the past have implemented camera or response based technologies.
the system allows for centralised monitoring of an entire fleet

SmartCap Fatigue Monitoring System

The SmartCap processes brain wave information and determines the wearer’s level of alertness every second. Confirmed alertness/fatigue information is displayed to the user on a fixed or mobile Bluetooth enabled device such as a mobile phone, PDA, or on a slimline or industrial SmartCap touch screen display.

If no confirmed level of fatigue is established within any two-minute period, the display is updated letting the operator know that their fatigue level is unknown. During this time, however, the system continues to function and reports a confirmed level of fatigue as soon as it is established.

The accuracy of the fatigue measurements has been independently validated by Monash University and the Austin Hospital in Melbourne. The SmartCap has been medically certified to provide reassurance that it is safe to wear.

The system is also capable of determining when the cap is not in use (not being worn on the head), but still connected by Bluetooth to the display.

Features of the SmartCap System

- The system allows for centralised monitoring of an entire fleet
- Alertness / fatigue information can be communicated wirelessly to a number of devices, including mobile phones and PDAs using Wi-Fi or Bluetooth.

Features of the SmartCaps

- Low cost
- Flexible and comfortable
- Non-intrusive
- Replaceable

Managing your fleet using SmartCap Fatigue Manager™ (SCFM)
the SmartCap is an important advancement in fatigue management because it provides reliable, real-time fatigue monitoring.
Other publications in the SmartCap Information Series:

- SmartCap FAQs
- Remote Monitoring (coming soon)
- Using the SmartCap (coming soon)
- Deploying the SmartCap System (coming soon)
- Fatigue Validation (coming soon)
- What’s Involved in a Field Trial (coming soon)

For the latest information please visit www.smartcap.com.au

Contact EdanSafe:
PO Box 5234 Kenmore East QLD 4069 Australia
Phone: +61 7 3087 3413
www.smartcap.com.au
contactus@edansafe.com.au

Please note: It is requirement that all SmartCap Users fully consider the implications of implementing a new fatigue monitoring technology within their Fatigue Risk Management System. SmartCap is a decision support tool, aimed at providing additional information to operators in order for them to make better decisions. Under no circumstances does SmartCap reduce the responsibility of the user to monitor their own fatigue levels, and to act in a proper and safe manner.