



## Fatigue Management:

*Learn about the best way to precisely measure and manage operator alertness in real-time*



# The Impact of Fatigue



In the mining community safety is always the primary concern, and for good reason, without the tools and processes to create functional safety, a site is unequipped to protect its personnel, avert incidents and maximize production efficiency.

## 65%

Of haul truck accidents related to fatigue

At mine sites today, It is estimated that 65% of haul truck accidents are related to fatigue (*Caterpillar*). Considering that the rate of fatal incidents with haul trucks is greater when compared with any other mining equipment (*Faculty of Mining Engineering, WVU*), tackling fatigue at its source is a primary concern for mining operations that hope to eliminate this large source of organizational risk.



As reporting from government bodies and major industry players continues to demonstrate the link between costly site incidents and fatigue, operators and contractors alike rightfully seek solutions that can address this risk at its source.



In order to appropriately combat the wider risk of fatigue, solutions need to both empower operators to act on their fatigue before an incident occurs and provide retroactive analysis of the factors influencing their workforces fatigue.

# What is The Solution?



Today, there are several ways that mines can go about mitigating their risk of fatigue related incidents, but none are more precise in their identification of an operator's ability to resist sleep than EEG technologies (*Measuring Brain Activity*).

Our real-time fatigue alert monitoring system measures an operator's progression towards microsleeps in real-time using EEG Technology, so microsleeps can be prevented. It is a life-saving tool that helps operators manage their fatigue. It helps them know when they are at risk of falling asleep and are at risk of endangering their lives or others.



## Why EEG? - Fatigue Occurs in the Brain



EEG gives the earliest possible detection of fatigue through the measure of brain activity, eliciting the widest spectrum of data for actionable insights.

A measure of an operator's ability to resist sleep in real time. Not a fatigue prediction that is difficult to action or an alarm triggered as a microsleep occurs.



Early alerts enable action before fatigue incidents occur



Prevent eyes open microsleeps

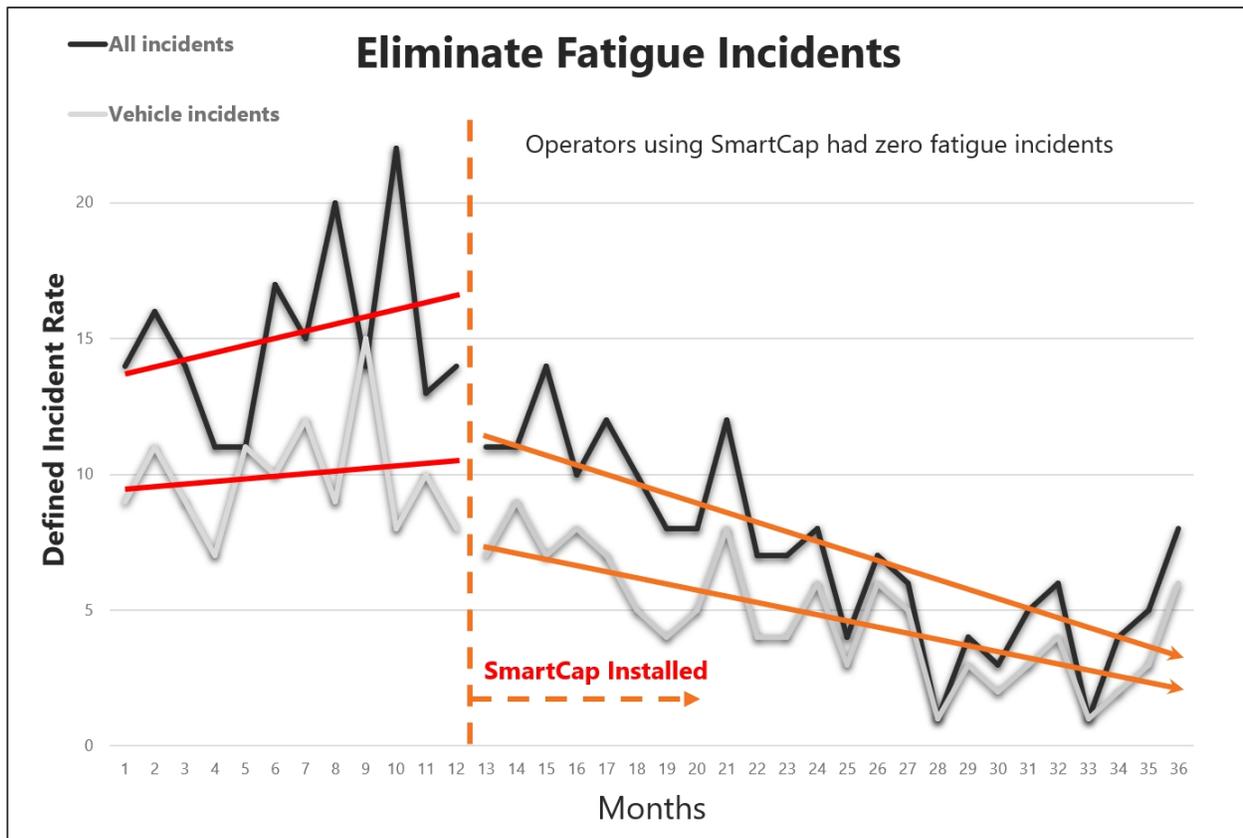


Enable effective self management by operators



Distinguish between cognitive and physical fatigue

## Clear and Measurable Risk Reduction



At a tier one mine in Hunter Valley Australia, the implementation of SmartCap on only a small portion of the operation led to a **70% reduction** in vehicle related incidents over 3 years of use.

By empowering operators to measure and manage risk with EEG Technologies, SmartCap's clients are able to boost their workforce alertness and create demonstrable gains in safety.

# What is the Value?



## CASE STUDY: BASE METAL MINING OPERATION WITH GLOBAL INTERESTS

With a core value statement of, 'We think safety first', this global base metal mining company invests in employee welfare. Originally trialling in a head to head against a camera-based solution, SmartCap's superior predictive technology and real time fatigue alerts made it the obvious choice for an operation where worker wellbeing is paramount.

The leading indicator nature of our alerts and alarms and the additional proven accuracy of SmartCap's measurements was the reason SmartCap was selected. The product suite has so far been deployed at the company's South American copper mining operation and in Australia at its zinc mine, where, as a fly in, fly out operation, SmartCap is viewed as an essential component

### Results:



In the two years since deployment, all SmartCap users on both sites have enjoyed a **zero fatigue incident record.**



The Australian site has adopted an **'every journey, every time' policy** with regards to employees use of SmartCap.



As a sophisticated and established SmartCap site, the management engage closely with the SmartCap operations team to test new releases and provide vital feedback helping us to constantly refine our cutting edge technology.

# What is the Value?



## CASE STUDY: LARGE COPPER MINING OPERATION IN EAST ASIA

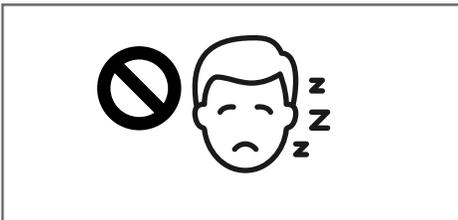
SmartCap's installation at this open-cut copper mining operation in Southeast Asia followed multiple successful deployments in Australian coal operations across the business's global portfolio. Fatigue had been identified as a potential hazard, with the mine's haulage fleet recognised as the highest-risk asset class.

**Zero** Fatigue Incidents

**97.7%** effective self management

**Pinpointing of seasonal fatigue risk levels**

### Results:



There have been **zero fatigue incidents** for SmartCap operators across 3.5 years and 1.1 million hours of operation.



Early warning alerts have resulted in **97.7% effective** operator self-management actions.



The SmartCap data has generated the business insight that there is an **80% increase** in the fatigue risk alarm rate during the sub-zero winters compared to summer periods.