Fatigue Science

Throughout mining and other heavy industry sectors, worker fatigue is recognized as a costly and deadly problem affecting both employers and employees alike. Most commonly, worker fatigue is associated with major accidents and fatalities, and the notion of an operator falling asleep at the controls is an ever-present concern in 24/7 operations. While catastrophic losses are certainly the most recognizable effect of fatigue, data increasingly reveals fatigue's impact on operations is far more pervasive. It's now possible to quantify fatigue's impacts not only on safety, but also on productivity.

Reactive fatigue technologies emerged in the early 2000s. Typically, they involve in-cab cameras that attempt to detect an operator falling asleep shortly before an incident is imminent. The technology then raises an alarm to disrupt operations. This means stopping a vehicle and pausing productivity to avert catastrophe.

By contrast, predictive fatigue technologies improve safety and productivity. Predictive technologies generate data long before critical fatigue events happen. These data enable proactive decisions at different times and by different roles within an organization—including by supervisors, dispatchers, management teams and operators themselves.

Readi FMIS by Fatigue Science is the world's leading predictive fatigue technology. Using Machine Learning and optional wearable technology, Readi generates daily personalized fatigue predictions for participating operators by analyzing their trailing 10 days of sleep data in combination with circadian factors.

Supervisors and dispatchers receive Readi's predictive fatigue data at the start of each shift. With these data, they optimize daily task assignments for operators under their purview. They may reallocate the most challenging tasks to less fatigued operators and ensure the most complex tasks are performed by the right worker at the right time of day. In rare cases, a supervisor may ask a critically fatigued operator to rest (non-punitively) if no suitable low-risk tasks can be substituted.

Separately, individual operators have a role to play in using predictive fatigue data to reduce risk. Each day, operators receive sleep data and personalized fatigue predictions for their shift ahead. Through daily exposure to personal sleep and fatigue patterns, operators have been shown to gradually improve their sleep habits, which in turn reduces aggregate fatigue levels for an organization.

Readi has shown significant impact on business' safety and bottom lines. The technology reduces fatigue by providing insights to employees. It also allows supervisors to optimize workflow by assigning workers to specific tasks based on their fatigue predictions. Finally,

Fatigue Science calculated two North American mines using Readi for over a year have seen an estimated 26% reduction in fatigue-related incidents and gained a projected $6 million in annual benefits per site due to increased productivity and safety cost reductions.

Ultimately, predictive fatigue technology is one of the few areas where worker wellbeing and safety truly coincide with increases in operational productivity. It is a rare win-win for employees and employers alike. It's why mine sites and industrial operations on 96 countries are using Readi to improve operations—with adoption growing rapidly.