

AlertMeter Case Study

Addressing Fatigue and Impairment with AlertMeter Assessment and Fatigue Prediction Technology at ConGlobal



About ConGlobal

ConGlobal employs ~2000 operators in safety-sensitive roles, specializing in terminal operations. The company offers a range of traditional services - including terminal and yard management, container and chassis maintenance, equipment repairs, and logistical support - wrapped in advanced technology to drive efficiencies and throughput for customers. In dynamic terminal environments, where heavy equipment and changing circumstances are commonplace, a lack of focus can create risks - not only to the individual operator, but also to those around them and to valuable assets.

Because research shows that highly fatigued operators can have reaction times similar to those with .08 blood alcohol content (BAC), ConGlobal acknowledges that fatigue and impairment are closely related. Impairment is not limited to drugs and alcohol; external factors such as stress, second and third jobs, family responsibilities, health issues, financial stress, and other life challenges can also contribute. Compounding these factors are the fatigue effects from overnight shifts and the stresses inherent in the work environment.

Safety is always ConGlobal's core value, driving the company's Zero Harm initiative and investment in continuous improvement. In addition to implementing best-in-class safety controls and workflow processes, ConGlobal sought new ways to mitigate fatigue-related incidents and events. Aware of the inherent hazards in their complex working environments and the impact of fatigue on safety, the company pursued a fresh approach to more effectively assess and mitigate both fatigue and impairment.

In response, ConGlobal implemented the AlertMeter® Assessment and AlertMeter® FRMS, an innovative Impairment Detection Technology (IDT) and Predictive Fatigue Risk Management System (PFRMS), from Predictive Safety SRP, Inc.

The Challenge

Due to the operational realities of the work being performed, many operators work long hours, have unexpected absences, work in potentially extreme conditions, move between day and night shifts, and often work **extended hours**. While implementing strict hours of service requirements was considered, it was not always practical given the availability of labor and the nature of the work. Fatigue and impairment incidents at ~40 operational locations posed risks to employees and potential damage to client containers and equipment. In striving to achieve

best-in-class safety and maximize cost avoidance, ConGlobal sought out a solution designed to promote alertness, proactively predict fatigue risk in real-time, and identify potential impairments due to lack of sleep, emotional distress or other factors.

The Requirements

ConGlobal sought an efficient and scientifically validated method to address fatigue exposures. The solution needed to:

- Address fatigue exposures management can control, such as hours of service, overtime, and shift rotation.
 - Address fatigue exposures beyond management's control, such as lack of sleep, emotional distress, medications, or off-duty behavior.
 - Integrate seamlessly into work processes with little disruption to the normal daily workflow.
 - Provide layers of informative and actionable reporting for senior management, middle management and front-line supervisors.
 - Provide real-time dashboards allowing front line managers to make fatigue-informed decisions regarding job assignments, overtime allocation, and schedules.
 - Provide a real-time cognitive assessment that could be executed prior to shift by all workers every day with zero impact to production and on time requirements.
 - Couple the cognitive assessment with real-time dashboards, notifications, and management tools providing managers the ability to engage in objective interviews with workers that may be struggling with alertness or distraction due to potential impairments
 - Provide minimal administrative burden through seamless integrations with their existing HRIS (Dayforce).
 - Be easy to learn, manage, and deploy.
 - Not require the use of wearable technology.
 - Complement their current safety systems.
 - Demonstrate to clients their commitment to exceeding industry safety standards.
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The Solution

To address overall impairment and fatigue risk, ConGlobal adopted the AlertMeter® Assessment System and the AlertMeter® FRMS (Fatigue Risk Management System)

This system helps manage both company-controlled factors affecting fatigue—such as hours worked, shift patterns, overtime, and sequential shifts—as well as external factors like sleep deprivation, emotional distress, illness, and medication use, which are beyond the company’s direct control.

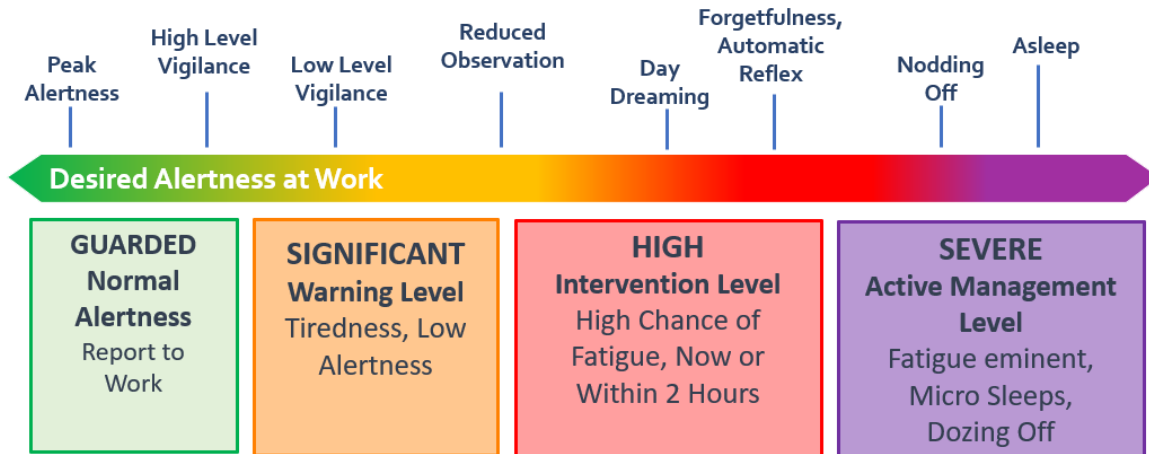
The AlertMeter® cognitive assessment helps identify fatigue and impairment risks at the start of each shift. The 45-second test is presented in a game-like format, making it quick and engaging for workers. The solution met ConGlobal’s needs with the following features:

- Seamless integration with Dayforce, ConGlobal’s enterprise HCM software, ensuring streamlined workflows.
- SaaS-based implementation, minimizing IT setup requirements.
- Compatibility with mobile devices and existing infrastructure.
- Scientifically validated methodology for objective results that is nondiscriminatory, language independent, minimizes use of personally identifiable information, EEOC compliant with zero HIPPA regulated data.
- Easy adoption and scalability across approximately 40 terminals.
- Robust real-time, daily, weekly and trending reporting capability.

To get ahead of the fatigue they can control and be proactive in scheduling and overtime decisions, ConGlobal also implemented **AlertMeter® FRMS (Fatigue Risk Management System)**. This system adds a layer of proactive fatigue risk management through:

- **Fatigue Prediction:** The system uses data like clock-in/out times, job risk, and commute duration to power a bio-mathematical model based on circadian rhythms and sleep patterns. This model calculates fatigue risk in real-time based on previous 14-day work history, circadian positioning, opportunity for rest and recovery, shift rotation direction and numerous other factors. FRMS provides a real-time **Fatigue Risk Index**. This index classifies workers into risk zones (Low to Severe), each paired with actionable mitigation strategies.

Exhibit 1



- **Integrated Alerts:** Notifications are sent to supervisors when a worker's fatigue level crosses a critical threshold, allowing for swift, data-driven countermeasures.
- **Long-Term Insights:** AlertMeter® FRMS tracks workforce fatigue trends, enabling sustainable scheduling and improved safety planning

Addressing Implementation Challenges

The company faced several challenges during implementation:

- Worker reluctance to engage in the daily AlertMeter® "Game" (cognitive assessment).
- Change management requirements that put additional requirements on shift supervisors and managers to interview workers that could not effectively score within their personal baseline on the assessment
- Effective utilization of AlertMeter® and AlertMeter® FRMS dashboards and reports
- Wi-Fi connectivity issues at some terminals.
- The need for phased rollout to ensure smooth integration and user acceptance.

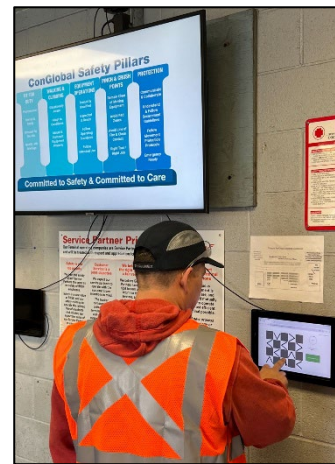
These challenges were addressed through a collaborative approach with ConGlobal's Safety Department, ensuring effective deployment.

Implementation

ConGlobal rolled out the system in phases across its 40 terminals. The implementation process included:

- Integration with Dayforce, enabling automated user management, streamlined scheduling, and reporting—delivering a **zero-administrative-drag** solution.
- Deployment of mobile-enabled devices to accommodate remote locations and connectivity challenges.
- Training sessions for management and staff, ensuring familiarity with the system.

During the initial rollout, workers were required to complete the assessment before starting their shifts. Over time, the system was fine-tuned based on feedback to maximize effectiveness.



Initial deployment efforts focused entirely on participation. Once participation reached above 95% on a daily basis, the focus shifted to manager engagement with workers that struggled with the assessment on that day (~2.5% of all assessments require manager engagement) The final phase of implementation focused on wellness, encouraging all workers to be rested, alert and ready for work by tracking results and encouraging an “OK” score on the first try. Being able to pass the assessment on the first try is highly correlative to an alert and productive workforce.

The addition of AlertMeter® FRMS enhanced this process by enabling:

- **Proactive Fatigue Mitigation:** Supervisors engage with employees when fatigue prediction indicates a chance for reduced alertness
- **Employee-Centric Solutions:** Managers prescribe countermeasures such as hydration, short breaks, or task adjustments to mitigate fatigue risk effectively.
- **Retesting on the AlertMeter Assessment:** When the FRMS system indicates a pending increase in fatigue risk, operators can report to an AlertMeter kiosk to check their ability to maintain alertness and continue with their normal tasks.

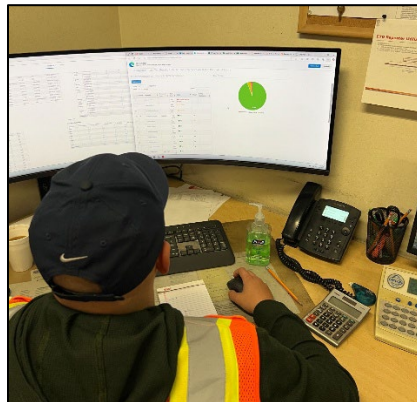
Process and Workflow

1. Before Shift Start:

- Workers complete the 45-second AlertMeter® Assessment.
- AlertMeter® FRMS provides managers with fatigue predictions and impairment alerts (txt and/or email) for predicted high fatigue states and potential impairments as detected by the AlertMeter® assessment.

2. Test Results:

- Passing scores allow workers to proceed to their assignments.
- Workers scoring outside their baseline undergo a second attempt.
- A second below-baseline score triggers a notification and a follow-up evaluation by a supervisor.



3. Evaluation:

- Supervisors document observations and determine fitness for duty, using integrated forms in the system.
- Fatigue risk alerts trigger manager-led discussions with employees, including prescribed countermeasures.
- Based on the supervisor's evaluation, workers may be reassigned to non-safety-sensitive duties for the day if necessary.
- **Clarification:** AlertMeter® does not determine worker disposition—this decision is made through direct conversation and evaluation by a supervisor.

4. Reporting:

- Real-time dashboards and detailed reports allow management to monitor safety metrics and incident trends.

Addressing Sustainability

As with all systems, sustainability is key to success. ConGlobal recognized the need to create standardized training programs that do not require third party intervention or direction. Some components of the sustainability initiative include:

- Training programs that integrate AlertMeter® operational and management training as part of overall onboarding and training methodology.
- Accountability to key KPI's by all terminal managers. These KPIs are:
 - 90% or better 1st try OK. (Rested Alert and Ready for Work)
 - 2% or less fatigue or impairment exposure (2x score back-to-back red scores on the AlertMeter® assessment) These are the events that require supervisor evaluation.
 - 8% or less in the wellness category for the AlertMeter® assessment
 - 98% participation for the AlertMeter® assessment
 - Less than 5% of hours being worked in high fatigue zones as reported by AlertMeter® FRMS
 - Less than 20% of all hours being worked in moderate fatigue zones as reported by AlertMeter® FRMS.
- Integration of these systems as key components of their broader safety culture.
- Standardized reporting and reporting processes

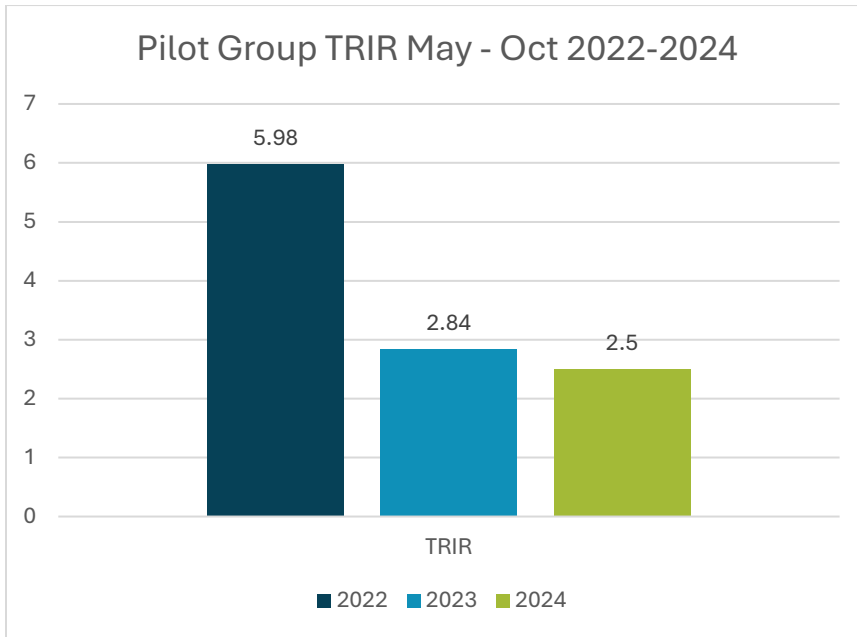
Results

ConGlobal's initial rollout of AlertMeter® and AlertMeter® FRMS at six sites (the Pilot Group) demonstrated measurable improvements in workplace safety. Over a six-month period, the system identified **2,785 instances of fatigue risk**, enabling supervisors to take proactive steps to mitigate potential hazards.

The Pilot Group

Demonstrable Reduction in TRIR: *Exhibit 2*

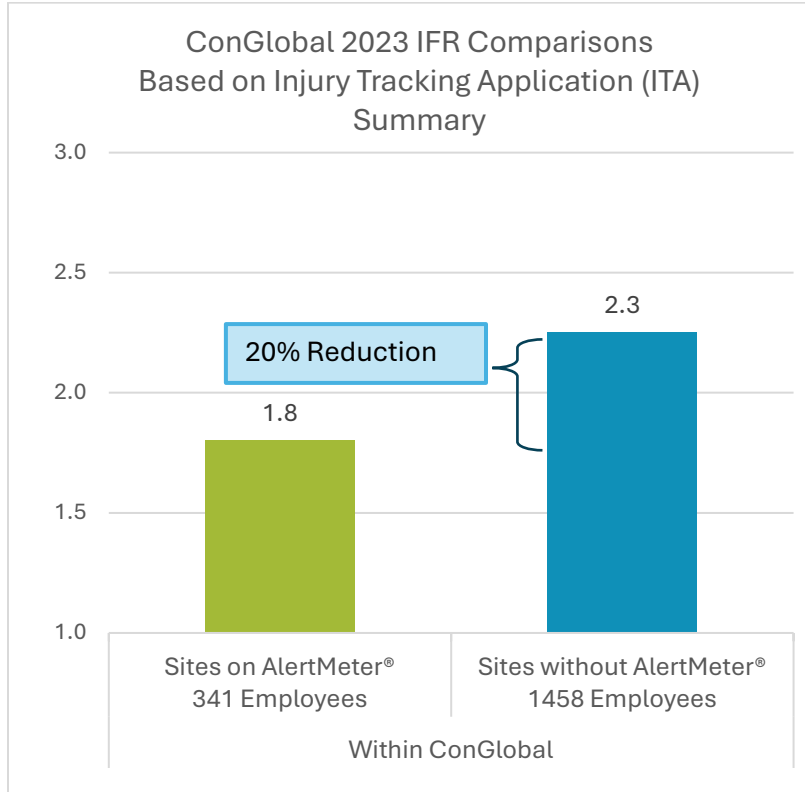
The introduction of AlertMeter® contributed to a **58% decrease in Total Recordable Incident Rate (TRIR)** across the six pilot sites 2022-2024, dropping from **5.98 to 2.5 TRIR**.



Comparison of Sites With and Without AlertMeter®: Exhibit 3

An analysis of **Injury Tracking Applications (OSHA Form 300A)** showed that the six pilot sites had an **Injury Frequency Rate (IFR) of 1.8**, compared to **2.3 IFR at other ConGlobal locations**.

Exhibit 3



Overall Fatigue Risk Reduction: *Exhibit 4 & 5*

As shown in Exhibit 1, High Fatigue suggests enhanced fatigue risk within two hours, causing reduced alertness, forgetfulness, and slower reflexes. Severe Fatigue signals imminent exhaustion and micro-sleeps, posing an immediate risk of dozing off. Both increase the likelihood of errors and accidents, especially in safety-critical roles.

- After **one year** of using AlertMeter®, the six pilot sites saw a **50% reduction in high/severe fatigue work hours**, decreasing from **7.2% in Q4 2023 to 3.6% in Q4 2024**, even as the workforce at these locations grew from 317 to 449 employees. (Exhibit 4)
- The **average number of high/severe fatigue working hours per 100 hours worked** also decreased by **55%**, dropping from **1,571 hours (three months after implementation) to 707 hours (one year after implementation)**. (Exhibit 5)

Exhibit 4

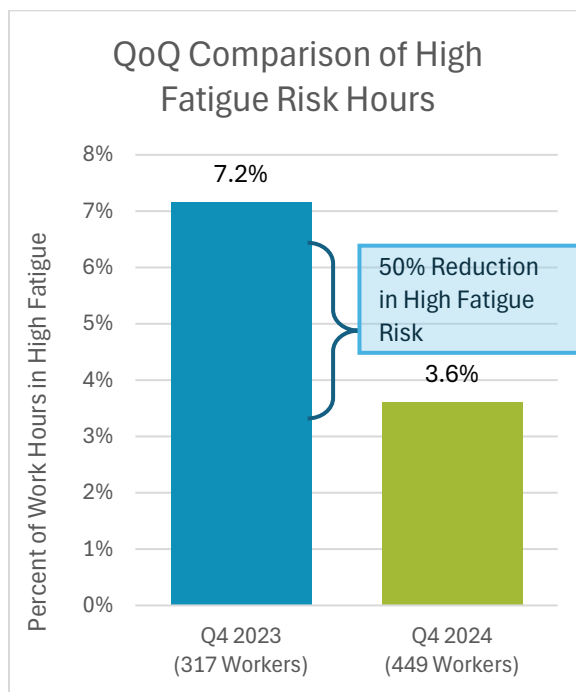
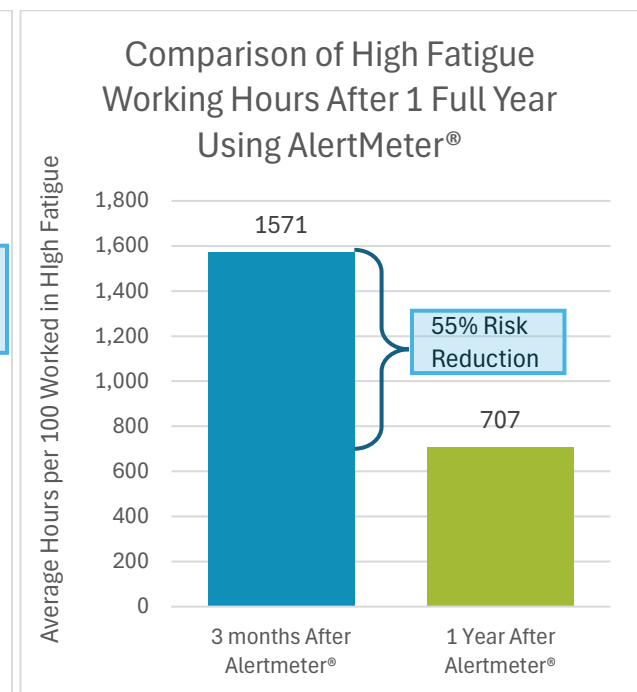


Exhibit 5



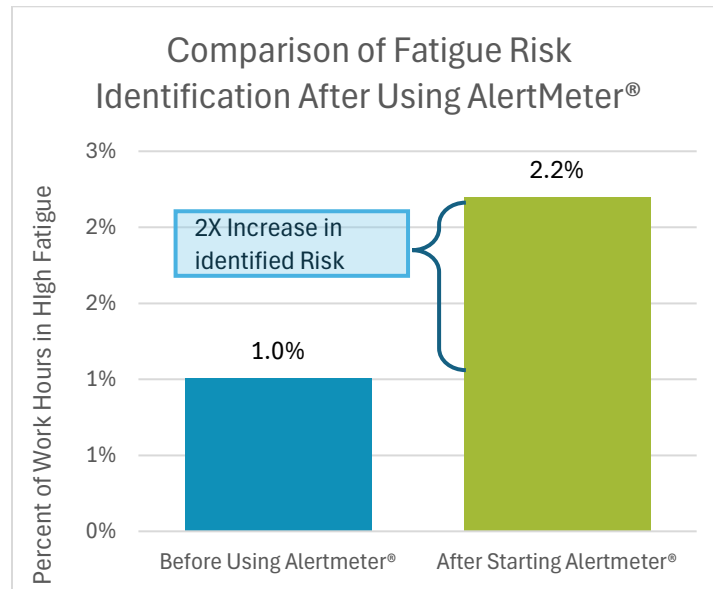
Expansion and Company-Wide Impact

Encouraged by these results, ConGlobal expanded AlertMeter® to approximately 35 sites in 2024, reinforcing its commitment to safety, risk prevention, and data-driven decision-making.

Improved Fatigue Risk Identification: *Exhibit 6*

As additional ConGlobal sites implemented AlertMeter® throughout 2024, the system identified **twice as many fatigue risks** as scheduling data alone had previously detected. The percentage of work hours flagged as high-fatigue increased from **1.0% before using AlertMeter® to 2.2% after implementation**. While this may seem like an increase in risk, **it is identifying the unseen risk**- providing managers with the critical insights needed to intervene before incidents occur.

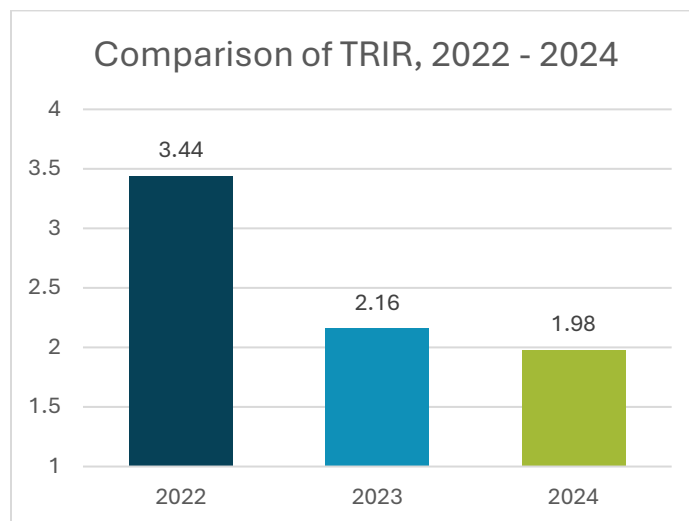
Exhibit 6



Decrease in TRIR and IFR Across the Enterprise: Exhibit 7

As ConGlobal has rolled out AlertMeter® and AlertMeter® FRMS across the enterprise, they have made significant strides in improving workplace safety, as reflected in the steady decrease of its TRIR over the past three years. The TRIR dropped from 3.44 in 2022 to 2.16 in 2023, reflecting a strong commitment to reducing workplace incidents, with the pilot program’s success playing a key role in this improvement. In 2024, the TRIR further decreased to 1.98, continuing this positive trend and highlighting the ongoing impact of safety initiatives, including the expanded implementation of AlertMeter®.

Exhibit 7



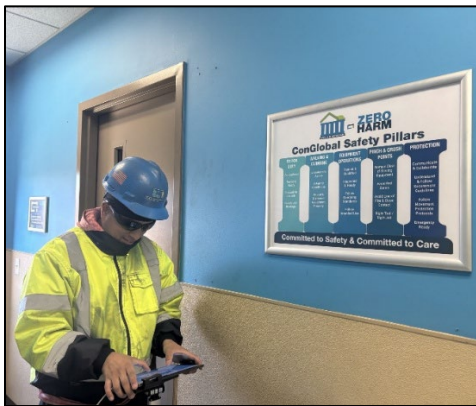
About AlertMeter® FRMS (Fatigue Risk Management System)

There are two components to AlertMeter® FRMS. Fatigue and impairment you **CAN'T** control and Fatigue risk you **CAN** control.

Impairment Detection (Fatigue & Impairment You **CAN'T** Control)

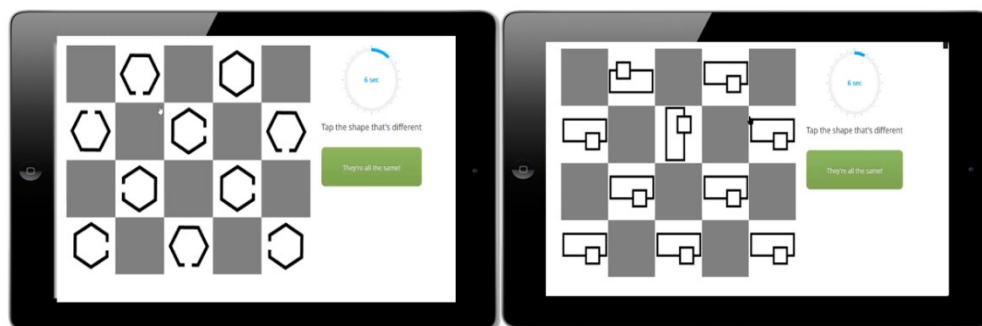
AlertMeter® Impairment Detection is a 45-60 second, game-like cognitive assessment that measures a worker's response compared to their individual baseline and gives a top-level indication of within normal range ("green") or outside normal range ("red").

Measuring outside normal range on AlertMeter® is an indicator for potential impairment due to fatigue, lack of sleep, substance abuse, illness, etc. **AlertMeter® is not a medical device and does not identify the cause... It's the tool that starts an objective conversation based on data.**



The "Game" Science behind AlertMeter®

Originally developed and validated by The National Institute of Occupational Safety & Health (NIOSH), AlertMeter® presents various shape families to the end user with the simple question of "are they all the same, or is one shape different?"



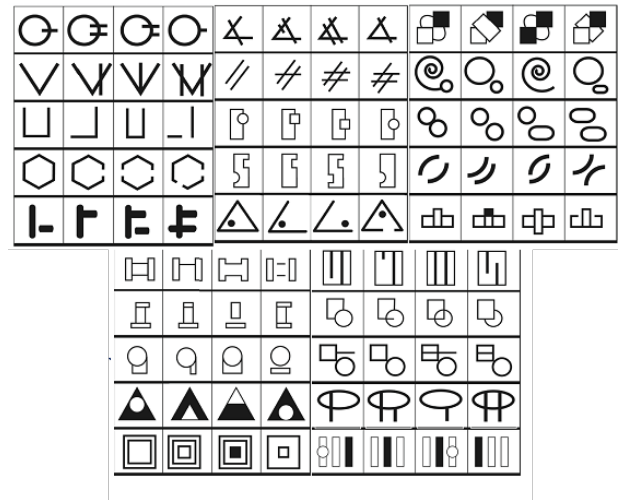
If one is different, you select the one that is different, if they are all the same, you select the button that says "all the same".

What makes AlertMeter® so effective is the users' responses to each shape question. As you play, AlertMeter® begins to learn about your specific understanding of each shape family and your ability to recognize the differences in them.

After 10 tests, AlertMeter® develops your own unique personal baseline which you are measured against each time you play.

AlertMeter® **NEVER** compares scores against other individuals, just your own personal results.

It's you against you.

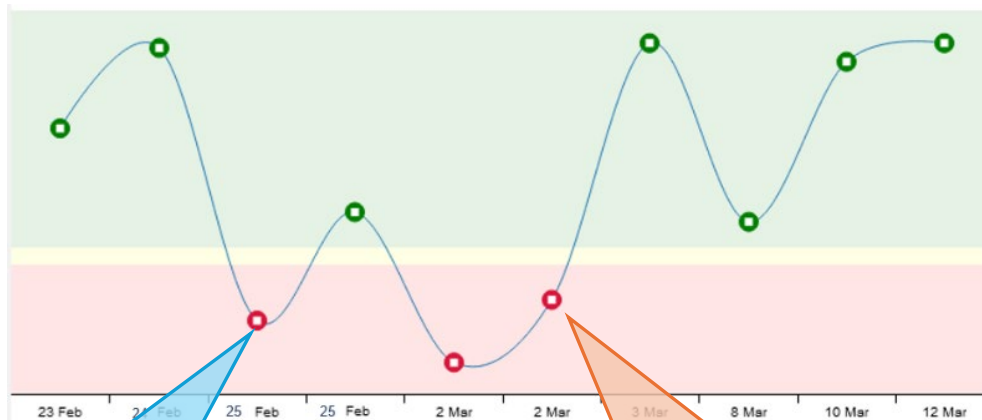


User Policy & Results View & Policy

The policy for taking AlertMeter® are simple.

1. Play the game every day at the start of shift (AlertMeter® can be executed at other times).
2. If you get a red dot, play again.
3. If you get a **second** red dot, STOP PLAYING, find a manager and have a safety conversation that otherwise might not have happened.

At the end of playing AlertMeter® each user sees their individual results. This is extremely important as AlertMeter® has “gamified” alertness. Users tend to want to perform better and make adjustments in their personal life (sleep, diet, etc.) to ensure their alertness on a daily basis.



Repeated single ONR is indicator for Wellness

AlertMeter® Fatigue Prediction (Fatigue Risk You **CAN** Control)

The optional AlertMeter® Fatigue Risk Management System (FRMS) and biomathematical model extends impairment detection into a comprehensive fatigue risk management solution. By integrating AlertMeter® data with scheduling, biometrics, and work history, FRMS provides a real-time prediction dashboard to identify who, when, and where presents the greatest fatigue risk through the remainder of the shift.

Factors Examined by AlertMeter® Biomathematical Model:

- **The opportunity for sleep between working hours:** Hours available for quality sleep after commute time, mealtime, family time, etc.?
- **Alignment of sleep opportunity with the circadian cycle:** How desynchronized is the body's sleep/wake cycle and scheduled work hours?
- **Impact of sequential shifts worked:** How much sleep debt is accumulated? What are the total hours worked in a given range of days?
- **The impact of shifting work hours and the direction of the shift:** Do shift cycles rotate from day to night shifts? What is the time given between shift pattern changes?

The results are an easy-to-read dashboard prioritizing who is at the greatest risk:

Current: 5% 5% 70% 13%
 Next: 4% 70% 20% 6%

All Departments: 79 employees checked in

Employee Name	Badge	Department	Supervisor	Clocked In	Current	Next	Shift End	Sleep	Tested	C.M.	Hours Over
Muktin Muktin	1004064	SITE PRODUCTION	AL WUSYATA	Mon 17:20	SEVERE (4 hours) 01:19 → 05:30			🟢	🔴 IMPAIRED	🟢	-4
Yono Surahman	1004026	SITE PRODUCTION	FAJAR PRIYANTO	Mon 16:56	SEVERE (4 hours) 01:19 → 04:56			🟢	🔴 IMPAIRED	🟢	-3
Gesang P	1Y22054	SITE PRODUCTION	HYOTO PURNANTO	Mon 16:34	HIGH (2 hours) 01:19 → 03:34	SEVERE (1 hours) 03:34 → 04:34		🟢	🟢 OK	🟢	-3
Suryadi Karl	1Y22118	SITE PRODUCTION	WAFU SARDONO	Mon 17:17	SIGNIFICANT (3 hours) 01:19 → 03:17	HIGH (2 hours) 03:17 → 05:17		🟢	🟢 OK	🟢	-4
Ahmad Amin Masykuri	1Y21017	SITE PRODUCTION	AS SYTA IBNU WELJUDIN	Mon 17:27	SIGNIFICANT (3 hours) 01:19 → 04:17	HIGH (1 hours) 04:27 → 05:27		🟢	🟢 OK	🟢	-4
WARIS PRIYANTO	1Y22051	SITE PRODUCTION	HENDI WYONO	Mon 16:58	SIGNIFICANT (3 hours) 01:19 → 03:58	HIGH (1 hours) 03:58 → 04:58		🟢	🟢 OK	🟢	-3
Eko Cahyono	1Y22125	SITE PRODUCTION	ANDRIA DWIE H.	Mon 17:03		HIGH (4 hours) 01:19 → 05:03		🟢	🟢 OK	🟢	-4
Aris Cahyono	1Y22123	SITE PRODUCTION	SUMARDI SUMARDI	Mon 17:13	SIGNIFICANT (3 hours) 01:19 → 03:13	HIGH (3 hours) 03:13 → 05:13		🟢	🟢 OK	🟢	-4
M. Rapi	1Y23029	SITE PRODUCTION	RICKY CORNELIA AGATIA	Mon 17:21	SIGNIFICANT (2 hours) 01:19 → 03:21	HIGH (2 hours) 03:21 → 05:21		🟢	🟢 OK	🟢	-4

* AlertMeter® FRMS adjusts Fatigue prediction based on AlertMeter® Assessment results

A Complete Fatigue Risk Management Solution

By coupling this predictive model with the impairment assessment tool, AlertMeter® FRMS is able to adjust fatigue risk based off of the fatigue you **CAN'T** control and the Fatigue you **CAN**.

By integrating these processes, AlertMeter® FRMS offers a nuanced understanding of employee alertness, enabling organizations to implement targeted interventions and coaching that enhance safety and significantly mitigate the risk of fatigue for increased productivity and employee performance.