Construction

Key global statistics

US$1.37T estimated cost of annual workplace injuries

9.6 deaths per 100,000 workers

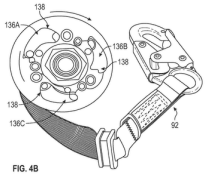
2.4 non-fatal injuries per 100 workers

Falls, electrocution and striking by an object are the greatest risk factors.

Illustrative patents

Prediction

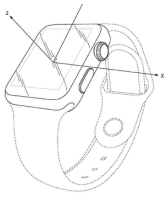
WO2018071695



Problem: Fall-protection gear lacks real-time hazard detection.
Solution: Sensor-equipped self-retracting lifelines feed predictive analytics for instant alerts.
Effect: Early warnings cut fall risks

Detection

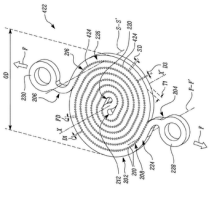
WO2019067424



Problem: Mobile device fall detection is often inaccurate.
Solution: A mobile device uses falling data to accurately detect a fall and alert others.
Effect: Fewer false alarms and faster

Protection

WO2021001711



Problem: Manufacturing complex fall-protection energy absorbers is costly and inefficient.
Solution: A single-piece energy absorber with spiral tear paths is designed to absorb fall energy.
Effect: Simpler manufacturing, lower cost

Mining

Key global statistics

US$0.32T estimated cost of annual workplace injuries

14.5 deaths per 100,000 workers

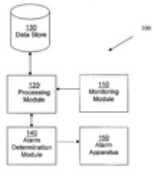
1.4 non-fatal injuries per 100 workers

Falls, crush injuries, gas leaks, and explosions are the greatest risk factors.

Illustrative patents

Prediction

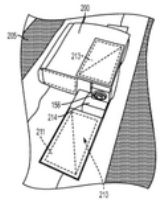
WO2007012112



Problem: Monitoring slope stability is difficult.
Solution: A method calculates dimensionless threat estimates from displacement data and sets alarms.
Effect: Enables timely, automated alerts for potential slope failures.

Detection

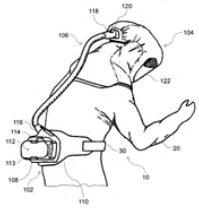
WO2014043177



Problem: Workers face injury risks from mobile equipment.
Solution: An integrated personal alarm device (PAD) provides alerts by detecting magnetic fields.
Effect: Enhances worker safety with effective alerts.

Protection

WO2015073405



Problem: Respiratory protection systems have unreliable alarms.
Solution: A blower filter device with wireless alarm communication for alert visibility.
Effect: Enhances safety through effective alarm transmission.

Source: WIPO, based on data from Orbit Intelligence (Questel), August 2025.
Key global statistics are estimates based on specific assumptions due to limited data availability.