EMERGING SAFETY TECHNOLOGY

Matthew Kanneberg, WestRock

Director of Medical, Ergonomics & Home Office H&S COE
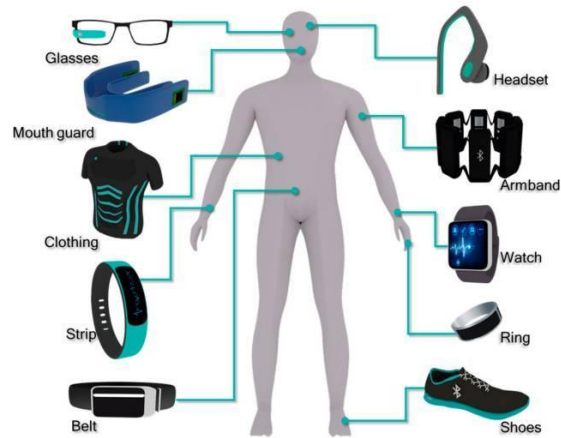
DeWayne Bone, Greif

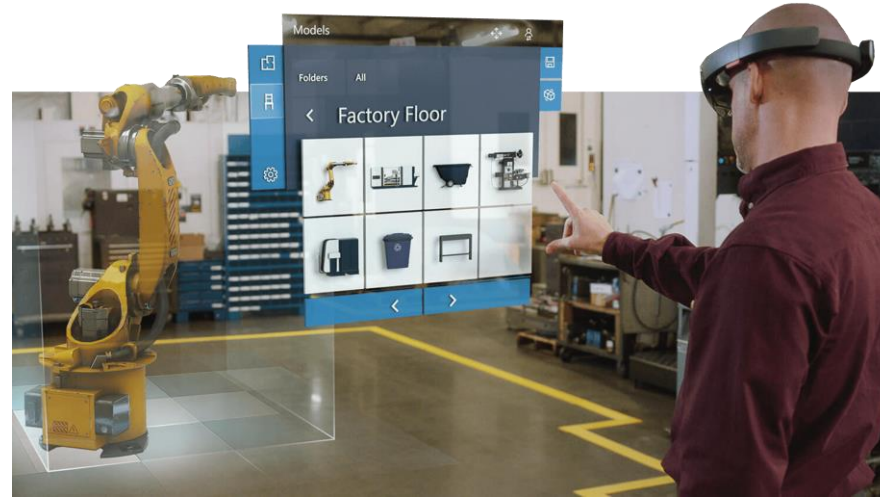Director of Safety & Health - PPS

June 14, 2023

WEARABLE TECHNOLOGY
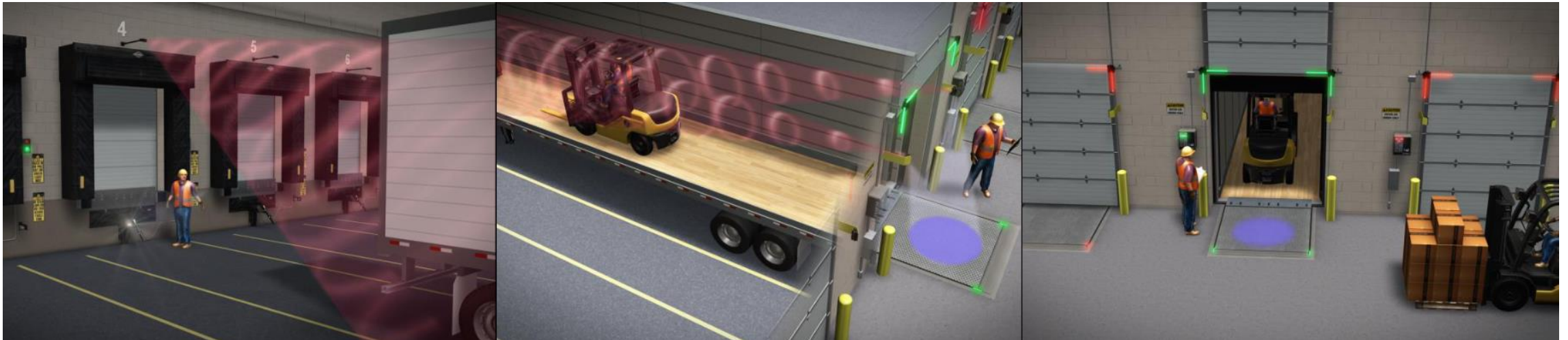
AUGMENTED & VIRTUAL REALITY

PREDICTIVE ANALYTICS

INTERACTIVE ENGINEERING

TECHNOLOGY USE CASES

Augmented & Virtual Reality
- Remote Expert (audits, site support and targeted programs i.e. remote ATC)
- Training

Interactive Engineering
- Dock safety
- Controlled access zones
- Robots/Co-bots

Exoskeletons/Exosuits
- Targeted ergonomic high-risk manual lifting
- Temporary use during upset conditions

Camera Vision & Predictive Analytics
- Realtime alert for high risk events and targeted high-risk awareness
- Data collection to evaluate frequency/severity of high-risk

Wearables
- Collection of environmental data within the work environment (sound, light, heat)
- Collection of at-risk biomechanics data as relates to teammate interaction with machines, their workstations and the jobs/tasks they perform every day

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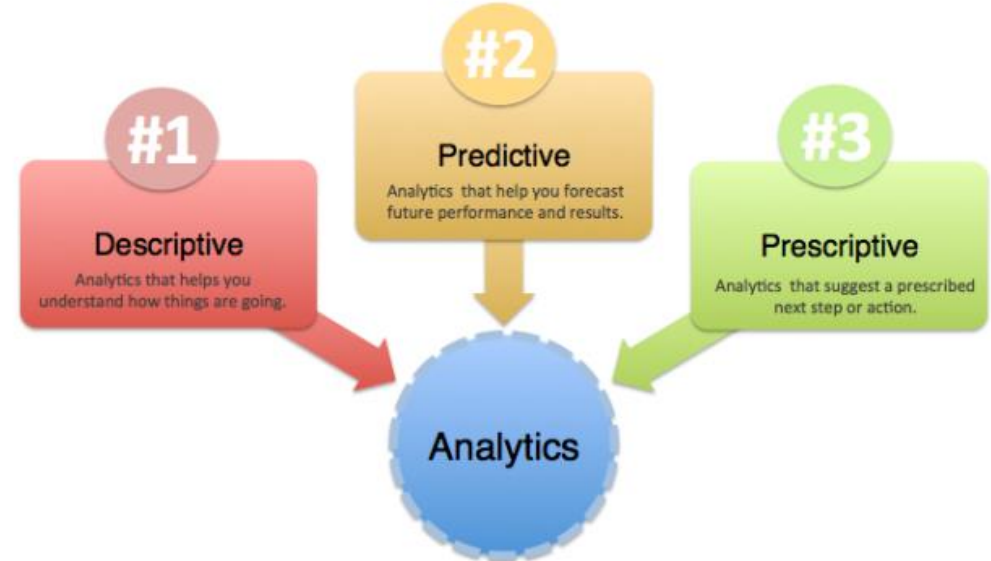
ARTIFICIAL INTELLIGENCE & PREDICTIVE ANALYTICS

WEARABLE TECHNOLOGY

THE FUTURE OF INDUSTRIAL SUSTAINABILITY: WORKER-CENTRIC AI™

Sentri360® is the only platform and interface industrial workplaces need to create and manage a proactive worker health, safety, and productivity program. Sentri360® utilizes Everguard's pioneered Worker-Centric AI™ technology, the first artificial intelligence (AI) platform to create a conscious environment powered by sensor fusion that senses distress and danger long before a human can.

INTRODUCING

sentri360®

FROM

EVERGUARD.ai

Applications and Use Cases

Sentri360® EHS Wearables Features

WORKER WELLNESS

- PPE (Hard Hat, High Visibility Safety Vest, Gloves, Safety Glasses, Mask)
- Dehydration/Heat Stress
- Fitness/Illness
- Environmental (Air Quality, Temperature and Humidity, Noise, Carbon Monoxide, VOC)

OVEREXERTION/MSD

- Ergonomics
- Fatigue/Overexertion
- Musculoskeletal Disorders (Back, Shoulder, Ankle)

WORK ENVIRONMENT

- Virtual Fence (Restricted Area, Hazardous Area)
- Environmental Conditions (Water Leak, Fire, Smoke)

COLLISION/FALLS

- PPE Harness
- Guardrail Detection
- Vehicle-to-Worker
- Slips, Trips, Fall Detection

OVEREXERTION

MUSCULOSKELETAL DISORDERS (MSD)

SLIPS, TRIPS, FALLS
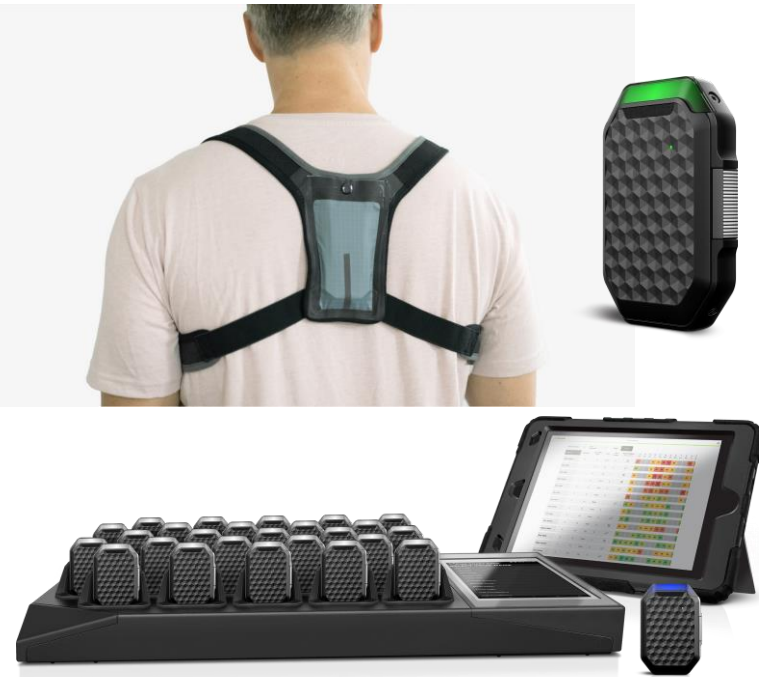
CONTACT/IMPACT

THERMAL STRESS/ DEHYDRATION

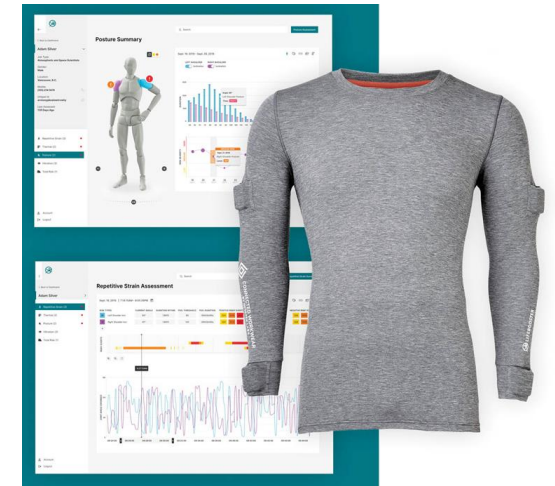**REAL-TIME ALERTS**

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BODY MECHANICS WEARABLE TRIALS
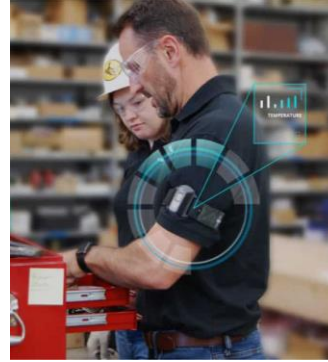

Trialed at Lanett, AL

Trialed at Hendersonville, NC

Trialed at Lancaster, PA

WEARABLE TRIALS
Hendersonville, NC Consumer Container, January 31, 2023
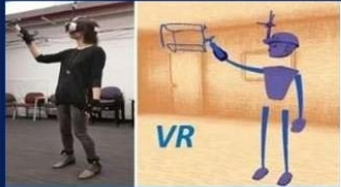
Wearable Anatomy

- LED
- Microphone
- TVOC and CO_2
- Manual Submit
- WiFi
- Bluetooth
- Visible Light & Infrared Light
- Temp
- Humidity
- Air Pressure
- Accelerometers
- Battery

ARM Cortex M4F CPU

Environmental Conditions | Forceful Motion | Location | Voice Memos/Near Misses

AUGMENTED (AR) & VIRTUAL REALITY (VR)

VR – TRAINING
- High risk training can be conducted in a virtual world (PIT, Line Breaking, LOTO)
- Virtual world can be a real 360° 3D mapping of our sites
- High risk hazard hunting in a safe but virtual site-specific environment
- Test frontline leaders competencies

AR – TRAINING – INSPECTIONS – REMOTE EXPERT
- Remote Expert can remotely join in via AR device (We use MS HoloLens)
- In the field of vision, user sees overlays, tags, icons, delineation, labels…
    - Lockout points, emergency shutoff locations, high risk/pinch points
    - Documents (SDS, JHA/SOP, LOTO Instructions)
    - Numeric sequence of start up instructions
    - Inspection points (ie. color coded, flashing, expired)
- Training guide to take new-hires on a tour to indicate life safety highlights (exits, fire extinguishers, emergency shutoff points, alarm locations)
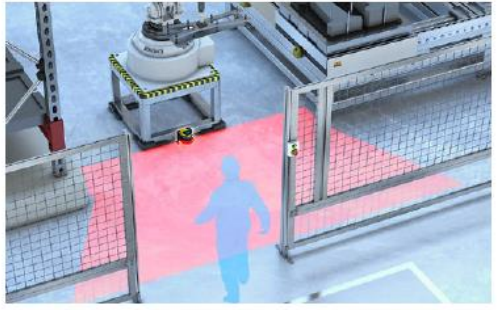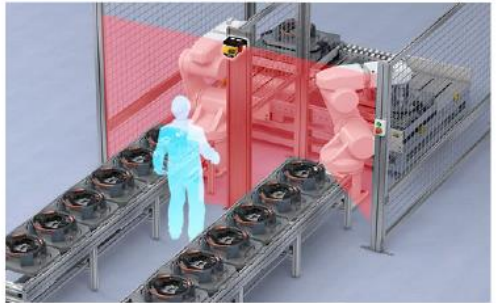- Maintenance support (grease points, calibration details, OEM info)

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INTERACTIVE ENGINEERING

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KEYENCE

Mechanical Aid Exoskeletons

Laser Scanners & Light curtains

Area Protection

Adjustable support structure
Arm bar
Upper-arm bracelets
Stabilization structure
Passive joint
Support bar
Hip belt
Passive actuator

Access Protection

Cobots & Robots
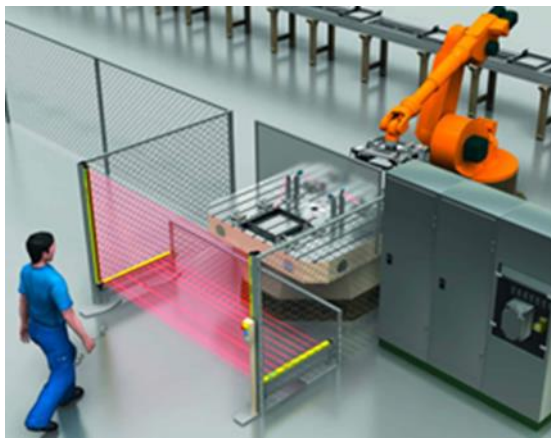
Area Protection

Auto Guide Vehicle Protection

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