WORKtoZERO an nsc program

Safety Technology Case Study

Augmented Reality Headset

What's the Risk?

In 2017, Boeing worked with the U.S. military to convert their 767 aircraft into a tanker capable of midair refueling. A significant amount of rewiring was necessary on the lower deck, but working in the confined space meant electricians needed to find enough floor space to lay out printed schematics. From there, they would memorize the configuration, return to their work area, and reconfigure the wiring from memory. This process would repeat until the job was completed (est. 4 hours).

Notably, other machinists were working in the aircraft at the same time, often needing to remove whole sections of the floor. Traversing the work area posed several safety risks, including falls, trips, lacerations, and potential head injuries. The nature of the job and cramped space also posed the risk of ergonomic injury, heat stress, and cognitive overload.

To reduce these hazards, Boeing implemented the Microsoft *HoloLens*, allowing electricians to safely view 3D schematics and other safety messages through a self-contained augmented reality (AR) headset.

Impacts

Use of augmented reality eliminated the need for employees to repeatedly leave their work area to consult the schematics, leading to **several benefits:**

- Reduced risk of SIF events, cognitive overload, and fatigue
- Improved productivity and work quality
- Increased rate of "first-time pass quality" (50% to 97%)
- Reduction in the overall job time
- Ability to project other safety messages and reminders

Lessons Learned

As one of the first to trial AR in a production environment, Boeing emphasized several **key lessons learned:**

- Trainings should address the safe operation of AR on-site
- Necessity of cross-departmental AR policies and procedures (e.g. length of use, cleaning, storage, data privacy, etc.)
- Leverage the trial process to identify and correct unforeseen consequences (e.g. interactions with PPE, IT compatibility, etc.)
- Adoption of off-the-shelf technologies requires significant flexibility and resources, industry-wide collaboration can help streamline this process

Employer

BOEING

Boeing

The Boeing Company is the world's largest aerospace company and a leading provider of commercial airplane, defense, space and security systems, and global services. Boeing employees more than 140,000 people worldwide.

Technology

Microsoft

Microsoft HoloLens

Microsoft's HoloLens (updated to HoloLens2) is a self-contained augmented-reality headset. The device, integrated with an on-board computer and built-in Wi-Fi, allows users to view and manipulate projected 3D holograms via gaze tracking, gesture and voice support.

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