XR TECH IN MANUFACTURING

PREPARING FOR INDUSTRY 4.0

THE WORKPLACE OF THE FUTURE IS HERE

Recent technological advances have produced tools that have shown startling gains in productivity, efficiency, accuracy, and safety. Virtual Reality and, especially, Augmented Reality have been tested and shown dramatic results. With the challenges facing manufacturers to replace an aging workforce and fill a growing labor gap, these tools can bring significant advantages.

"We believe that many industrial jobs will fundamentally change because of AR in the next five years." ***(International Data Corporation, June 17, 2017)***

Augmented Reality smart glasses can display instructions and information to assist workers in assembly, maintenance, or repair of equipment, leaving their hands free to perform the work. Use of 3D models in AR eases the cognitive load required to process instructions and reduces the possibility of error. Information about time required to complete tasks, notes indicating potential problems, and records of steps taken can be recorded and automatically saved to central systems. Experts in remote locations can assist technicians in the field, through "see what I see" functions, providing guidance on unfamiliar problems.

"We've seen productivity gains as much as 46 percent; reduced error rates and improved quality by as much as 30 percent; reduced training times and more. In fact, across multiple companies and industries, the average performance improvement using an assisted reality software platform with smart glasses is 32 percent. With the typical cost structure in a manufacturing plant, implementing such a solution for 1,000 industrial workers translates into $25 million dollars in return on investment (ROI) annually." (5 Advantages of Adopting Assisted Reality in the Industrial Enterprise, IIoT World)

KEY TERMS

Virtual Reality (VR): A computer generated environment viewed through a headset. Allows interaction with virtual objects. Effective for training.

Augmented Reality (AR): digital images or information overlaid on the real world, viewed through smart glasses, smart phone, or tablet. Leaves hand free for work.

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Used in training, Virtual Reality can give new workers experience in situations that rarely occur, that are dangerous, or that are costly. VR training modules require an upfront investment to design, but they can be deployed over and over again, and allow data to be collected that shows in what areas a trainee needs improvement or where there are recurring stumbling blocks in performance. VR is far more effective than written training materials, lectures, or 2D videos because it allows the worker to virtually perform the task, which has been shown to create the same neural memory patterns as performing the action in real life.

Walmart partnered with StriVR on employee training and found that "Real-time data collection and analytics lead to adaptive training, predictive and prescriptive insights, and better employee performance." (Derek Belch, STRIVR, VRX San Francisco, December 2017)

Augmented Reality is also highly effective in training and job performance because it delivers information in visual form right at the time and place where it is needed, avoiding the need for a worker to translate from written instructions or a 2D diagram when performing tasks. With instructions and 3D guidance in the line of sight, there no need to turn away from the job at hand or shuffle through instruction manuals.

"Boeing is using AR to improve traditional training practices and has reduced the time required to train an employee in aircraft door assembly by four times." (PTC Report: The State of Industrial Augmented Reality, 2017)

Given that one of the most pressing issues facing manufacturers is the aging out of skilled workers, AR provides a way to maximize the expertise of experienced workers through placing them in the role of remote experts providing guidance to newer technicians. Programs allow both the field technician and the remote expert to annotate objects in real time, highlighting points of attention. Two-way voice video communication allows the worker in the field and remote expert to collaborate, facilitating the transfer of skills that are at risk of being lost as a generation of workers retires.

Xerox connected field technicians with remote experts and saw a 67% increase in first-time fix rates and 20% improvement in efficiency, in addition to saving time resolving problems. When used directly by customers, AR produced a 76% increase in customers being able to solve problems themselves, without a technician. (Harvard Business Review, Nov-Dec 17)

The potential gains in productivity, efficiency, and effective training make VR and AR difficult to ignore. Although implementation of these technologies does require an investment of resources, case after case shows that the payoff is more than worth it. In addition, such new tools make careers in manufacturing more appealing to a younger generation who has grown up in the digital era. Those companies who begin to scope out the benefits to them of VR and AR now will soon find themselves among the leaders, in a position to win big.

"Assume your competition will be employing this technology in the next 12-18 months." (Patrick Costello, Qualcomm, Augmented World Expo, May 30, 2018)

XRconnectED can help you determine how to get started with AR or VR and can assist in designing a roadmap for implementation. Contact us at info@XRconnectED.com to discuss your needs.

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