Light Guide Systems

Augmented Reality Case Study

Sequencing with Light Guide Systems: Luxottica

The Challenge

As part of their lens manufacturing process, Luxottica has a cleaning station for all lenses before they make their way to getting cut and eventually placed into a set of glasses. In this cleaning station sit eight groups of two machines each. In front of each machine sits three trays with two lenses each, which all need to be placed into the machine to get cleaned and coated, with each machine holding three lenses at a time. Operators manage two machines simultaneously, meaning that they unload and reload one machine while the other machine is running and the operator moves back and forth between the machines.

The main challenge for the operator is keeping track of which lens belongs in which tray, which is difficult because the lenses often look almost exactly alike. Furthermore, the trays get removed as they are completed, which results in the trays that have lenses currently in the machine changing places on the counter, thus providing even more confusion for the operator. Lenses can get mixed up between trays, which presents an obvious issue as glasses require a high level of accuracy to be useful to the customer.

LUXOTTICA

Luxottica, controls 80% of all glasses and sunglasses brands in the world, including Rayban, Oakley, Prada, Chanel and Versace.

Industry: Eyewear

Application(s):
Part Sequencing & Training

The Challenge: Defects are currently created due to lenses being mixed up in different handling and processing steps.

The Solution: Light Guide Systems (LGS) created visual guidance for the loading and unloading sequence of the lens trays.

The Solution

Luxottica's quality engineering department installed a Light Guide System™ (LGS) on one group of two machines that provided projector-based augmented reality, projecting work instructions and highlighting the lenses that needed to get cleaned and loaded next as well as the ones that were currently in the machine in the correct sequence. This took the role of sequencing away from the operator and put it in the hands of technology. With Light Guide highlighting each lens when it was relevant and displaying to the operator exactly what they had to do, the operator no longer had to remember where they were in the process. Rather, they could focus on proper cleaning of the lenses, ensuring the highest quality products make their way to the coater, non-conforming products do not, and restocking their supplies during wait times.

Results:

29% Reduction in Training Time

19% Improvement in Quality

ROI Less Than 1 Year

Sequencing with Light Guide Systems: Luxottica

" Light Guide has been a key driver in reducing breakage (scrap) and increasing efficiency. The Light Guide System made a process that was very complex for associates to think through into an easy 'follow the light' process. Using the Light Guide Systems in this area essentially error-proofed a complex manual process."

Todd Butts, Luxottica

The Results

The benefits of this approach were immediately clear through a decrease in defects and a more efficient training program. The decrease in defects is realized with a decrease in mix-up percentage (a metric Luxottica uses that represents how often an operator mixes up lenses in the trays, which is discovered downstream). New operators trained on the Light Guide System showed a 20% decrease on average in their mix-up percentage while using the system rather than other machines that did not have LGS. Perhaps even more meaningfully, experienced operators saw a decrease in mix-up percentage of 17% on average while using LGS.

Implementation of Light Guide also provided a benefit in training effectiveness. Four operators were trained using Light Guide to perform an initial study of required training time compared with the company average. AR training with Light Guide resulted in an average time saving of 35.2 hours per operator, which translates to a 29% time savings. Luxottica trained 22 employees in 2019, translating to an opportunity to save approximately 773 hours annually resulting in an estimated $15460 in direct annual savings through improved labor utilization using Light Guide Systems. This number, of course, only captures the up-front cost of training and not indirect value, such as the opportunity cost of the now trained operators in production, unutilized floor space and equipment time during training, or the lost time of experienced employees having to help the trainees.

Overall, the installation of LGS was a success in this facility. It yielded decreases in defects by 19%, as well as a 29% reduction in training time. Additional benefits include reducing cognitive load of the operator so they can focus on other things throughout their shift (quality, supply restocking which can result in a productivity increase, proper cleaning, etc.) and maintaining better focus throughout the shift by reducing energy spent thinking about sequencing.

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