



ENGINEERING OUT RISK AT THE WORLD'S LEADING E-COMMERCE FIRM

Using leading indicator safety data
to build a business case

“*Honestly, with the new angle of the conveyor, I don't go home with a sore back and shoulders anymore. I'd wear that sensor 24/7 if it results in more changes to the way we work like this.*”

— Associate, T&M Processing

INTRODUCTION

One of America's largest private employers, this global e-commerce giant is home to 750,000 employees spanning nearly 200 fulfillment centers and north of 150 million square feet of warehouse space — packing, shipping and delivering a dizzying array of products from groceries to electronics and everything in between.

Across its many facilities, leaders apply high standards of safety performance each day and proactively work with associates to reduce physical risk via coaching and ergonomic training. While safety is top of mind during each and every shift, the sheer scale of the operation and volume of product movement means workplace injuries are inevitable.

SITUATION

At the time of deployment, a one-of-a-kind fulfillment center processed all domestic returns for this e-commerce giant, where associates were tasked with handling return packages of all shapes, sizes and weights at a prolific speed and volume.

In one specific department, a central conveyor system served as the main artery, processing packages that accounted for 20% of the total work hours and 20% of the total throughput of the building.

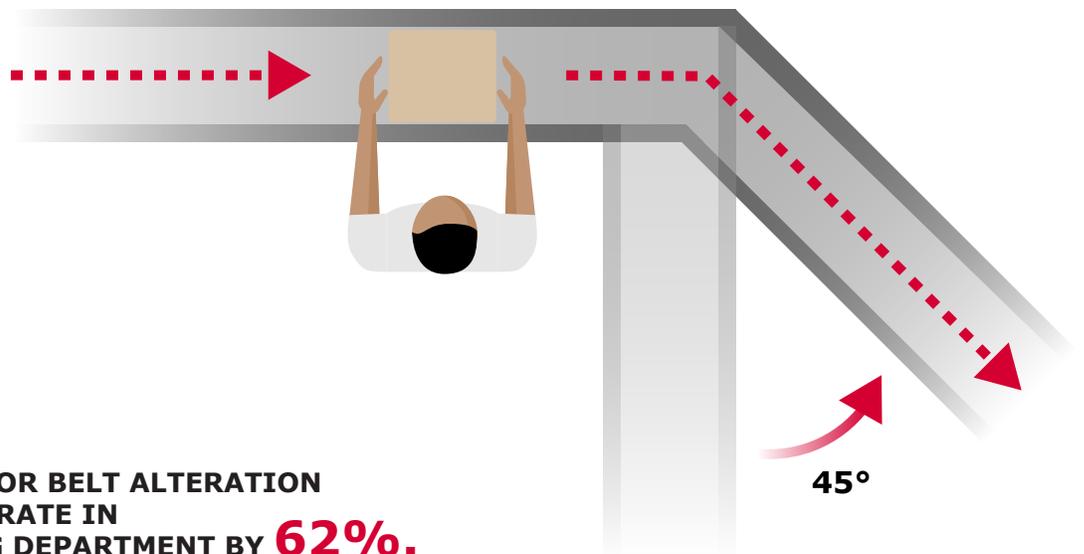
However, the department's physical space was not originally designed for processing non-conveyables, featuring a scanning station layout among the main arteries that caused associates to over-extend and maintain awkward postures in a cramped environment. As a result, the facility was experiencing a tremendous amount of musculoskeletal injuries in that department.

SOLUTION

EH&S Managers at the facility leveraged the StrongArm's FUSE Risk Management Platform to pinpoint the exact ergonomic bottleneck: a high twist velocity at a specific location was likely a major contributing factor to risk of injury for associates manning these stations.

Armed with this information, managers lobbied site leadership to test the efficacy of an engineering control. The team tested the impact of rotating the offshoot conveyors at scanning

stations by 45 degrees from their original right angle off the main conveyor, measuring the change in Safety Score, a comprehensive, actionable ergonomic risk metric ranging from 0-100, and two specific risk factors – twist velocity and forward flexion – the top contributors to back injury at the facility.



**A 45-DEGREE CONVEYOR BELT ALTERATION
REDUCED INCIDENCE RATE IN
THE T&M PROCESSING DEPARTMENT BY 62%.**

BENEFIT

While the ability to scale the FUSE Program was important in the company's decision to choose the FUSE Platform for the job, it was not paramount to the initial implementation as targeting the problem didn't require a massive rollout. In fact, just 55 associates participated in the pilot program, proving the efficacy of the technology when applied to a small, controlled study with massive, company-wide implications.

From a continuous improvement perspective, FUSE had two immediate and palpable impacts. First, it augmented the company's existing safety-focused approach using new and actionable leading-indicator data. Second, it empowered the Safety and Operations teams to regularly and dynamically provide recommendations to leadership, based on quantitative data, on how the business can improve associate safety.

ANNUAL PROJECTIONS ACROSS 1,000-EMPLOYEE FACILITY

62%

Injury Reduction

\$1.25M

Injury Savings

\$3.75M

Productivity Increase

SUCCESS

The cost of the initial engineering change was just over \$300k. The value realized from the ability of FUSE data to engineer out risk was exponential.

Not only did the intervention drastically open up space between conveyor belts on the warehouse floor, but over the course of the program, the test department saw a 62% reduction in overall injuries and a 68% reduction in medical recordables, accounting for \$250K in direct injury cost savings.

The 45-degree conveyor belt rotation increased department productivity by 17%, as associates could process about 1.2 more packages per hour over the course of a shift. This led to a

major reduction in overtime hours, resulting in an overall \$750K increase in productivity dollars across the whole department over the course of the program.

Projecting these numbers over the rest of the fiscal year, facility-wide injury savings eclipsed \$1.25M per year along with an increase in productivity dollars of \$3.57mm annually.

By the end of the program, the leadership team decided to implement this engineering change across all applicable departments in the facility with the business case anchored by FUSE data.

“The new ergonomic risk data allowed us to identify the root cause of injuries at our scan stations. We knew we had a hotspot based on historical injury data, but we didn't know why. Finding out the 'why', making a change based on that new information, and measuring that change for impact built the business case to engineer out the risk that was inherent in that job. We couldn't have done that without FUSE.”

— Site Safety Lead