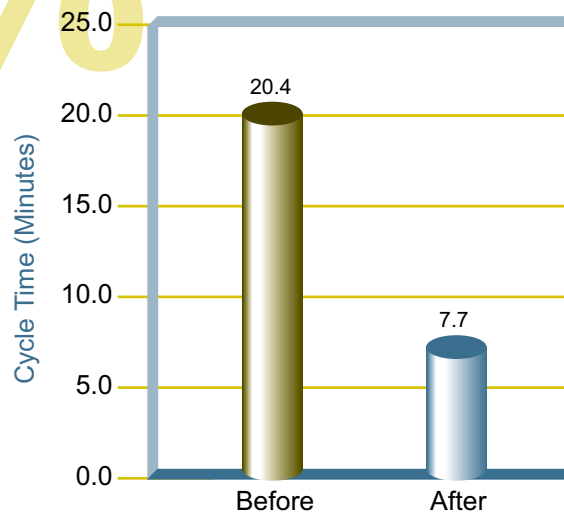


Toyota

Toyota Achieves Cycle Time Reduction from Ergonomics Redesign with Humantech

Toyota, the fourth largest automaker in North America, has three vehicle assembly plants in the United States and one in Canada. Toyota employs more than 31,000 people in North America, including nearly 20,000 at its manufacturing plants in California, Indiana, Kentucky, Missouri, and West Virginia, and Ontario and British Columbia in Canada. Toyota vehicles are manufactured in 27 countries and are renowned for their quality, reliability, and value.

62% Cycle Time Reduction



Humantech assisted Toyota's Georgetown, Kentucky, logistics operation in improving the rear spoiler installation for one of its best selling vehicles. A combination of low-cost and high-impact improvements resulted in reduced ergonomic risk and a 62% improvement in cycle time, translating into a \$262,000 annual savings in direct labor costs.

Toyota

The Challenge

Toyota Logistics in Georgetown, Kentucky, was facing significant design changes between two model years, resulting in potential ergonomic risk and inefficiencies, particularly with the rear spoiler installation. The automaker commissioned Humantech to conduct an ergonomic risk assessment and work measurements analysis, and to make recommendations for improvements. The job process in question entailed nine specific tasks ranging from removing the trim panels to attaching the spoiler to a final check and cleanup.

Humantech's risk assessment and operator interviews identified significant ergonomic risk. The operation, which required workers to climb inside the trunk, included such risks as extended reaches, deviated postures, and mechanical stress to numerous body areas. Humantech also performed a work measurements analysis of the entire operation. The cycle time of the operation totaled 20.4 minutes, with drilling, trunk preparation, and cleanup accounting for over half of that time.

The Solution

Humantech ergonomists made recommendations to reduce ergonomic risk and improve cycle time. The recommendations ranged from being easy to implement with moderate effects on risk and productivity to breakthrough improvements requiring a moderate investment and effort, which produced significant impacts on risk and productivity.

The easiest of the recommendations was to reduce tool reach and design new hand tools for the wire harness installation. Tools were removed from the suspension system, placed in a mobile tool cart, and angled 15 degrees, reducing the awkward postures and extended reaches, and resulting in reduced cycle times. A

newly designed tool allowed operators to install the harness from outside of the trunk, eliminating wasted motions, significantly reducing ergonomic risk, and saving 1.8 minutes.

The breakthrough improvements, requiring more effort and investment, included changing drill bits and designing an additional trunk part. By switching from a standard drill bit to a multi-flute end mill bit, operators were able to drill a hole through multiple layers of sheet metal, eliminating the need to vacuum up metal shavings. This recommendation significantly reduced awkward postures and resulted in a time savings of 8.9 minutes. Due to the added weight of the spoiler, the trunk lid would not stay open, requiring the operator to climb into the trunk to replace the torsion rods with higher tension rods. Rather than replacing these rods, a compression spring was designed to be inserted into both hinges of the trunk, increasing the force required to close the trunk lid. This eliminated non-value-added motions and wasted material, significantly reduced ergonomic risk, and resulted in a savings of 2.0 minutes.

The Results

The impact of these recommendations resulted in greatly increased operation efficiency and time savings at the highest risk operations. Toyota's \$9,000 investment resulted in increased throughput and less waste. The task cycle time was reduced from 20.4 minutes to 7.7 minutes, a 62% reduction, translating into a projected annual savings of \$262,000 in direct labor cost. Long-term savings include decreased medical and workers' compensation expenses, lower absenteeism, and reduced training of new associates.

About Humantech

For 30 years, global companies have relied on Humantech for workplace improvements. By combining the science of ergonomics and our unique 30-Inch View®—where people, work, and environment intersect—we deliver practical solutions that impact safety, quality, and productivity. At Humantech, we believe people make productivity happen. The 30-Inch View is a registered service mark of Humantech, Inc., 2008.