

Ergonomics ROI: Impacting Workers' Compensation Costs, Productivity, Quality and Revenue

Ergonomics...well, we've not heard that word for a while. Not since March 2001 when President George W. Bush utilized the Congressional Review Act to repeal the Federal Occupational Safety and Health Administration's (OSHA) ergonomics regulations. Concerns focused on a combination of the inability to determine what constitutes a musculoskeletal disorder (MSDs) and concerns for the high costs to both large and small employers.

"President-Elect Obama has promised to issue a new ergonomics regulation. This regulation is likely to provide the same stringent requirements and broad scope of the controversial ergonomics standard that was issued near the end of the Clinton administration..."

Recognizing that the changes in Washington will most likely result in new ergonomic standards this article takes a look at the cost associated with health and safety issues. While the likelihood of OSHA visiting a laundry processing facility are still greater than desired, the cost associated with workplace injuries is already climbing and often ignored.

Any laundry manager worth his/her salt would never propose capital spending without a thorough review of the "return-on-investment" (ROI). This article takes a look at the already skyrocketing cost from workers' compensation, loss of productivity, decrease in quality and eventually the operations bottom line. How can we apply ROI to issues of safety, and how ergonomics can seek engineering controls and work practice that can reduce this ever-rising cost?

Glossary

ERGONOMICS - The scientific study of work and space, including details that affect workers productivity and worker health. [Indiana State University terms for nursing students].

ENGINEERING CONTROLS - involve altering the physical items in the workplace, including actions such as modifying the workstation [Ergoweb].

MUSCULOSKELETAL DISORDER (MSD) - identifies a large group of conditions that result from traumatizing the body in either a minute or major way over a period of time. It is the build up of trauma that causes the disorder. [About.com]

RISK FACTOR - Something that may increase the chance of developing a disease. Some examples of risk factors for cancer include age, a family history of certain cancers, use of tobacco products, certain eating habits, obesity, lack of exercise, exposure to radiation or other cancer-causing agents, and certain genetic changes. [National Cancer Institute]

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Return-on-investment (ROI) is nothing new to the business world. Industrial Engineers in particular have relied heavily on cost justification when driving system improvements. ROI is understood to be the hall pass that gets you in the door with management - without ROI, projects and programs are relegated to the level of "nice to do" and funding is continually at risk.

In contrast, cost justification is a more recent reality for Health and Safety professionals. The purpose of their programs, improving employee health by reducing work-related hazard exposures, has been important enough to support their funding needs in past decades. Consequently, the Health and Safety field has not focused on the skills and data collection systems to support ROI statements that result from their contributions and achievements. The result is that ergonomics, a relatively new frontier for Health and Safety, is often seen as an expense (rather than an investment with financial gains) just at the time when companies are significantly tightening expense budgets.

The shift of ergonomics from an expense to an investment is much like the shift of quality programs from TQM to Six Sigma. In earlier times, it was enough to improve customer quality metrics - product failure rates, warranty claims, etc. Today, improvements in quality, and the associated cost savings, are a tool for the Six Sigma black belt to achieve ROI, Financial gain is the new yardstick.

The key to achieving ROI in ergonomics is not the mathematical equation - it's getting results that achieve financial gains. Many "ergonomics" improvements are ill-conceived, poorly deployed, and don't achieve results of any kind. Consequently, an ROI calculation will only highlight the lack of positive outcomes. However, ergonomics projects that are both effective and efficient can achieve 3-year ROI's above 1,000% - as demonstrated in a case study summarized at the end of this article.

Achieving Results with Ergonomics

Ergonomics projects must first be effective in reducing hazard exposures to achieve results. This is accomplished primarily through engineering controls - changes to the equipment, tools, controls, piece presentation, workstations, and work flow that eliminate or significantly reduce risk factors (primarily poor postures, excessive forces, and high rates of repetition). Projects that result in administrative controls (changes to task

responsibilities that reduce exposure to ergonomic risk factors) or work practices (changes to procedures and work methods that reduce exposure to ergonomic risk factors) are less effective in reducing injury potential and typically provide no gains in productivity, quality, or other areas that are seen with engineering controls.

Ergonomics projects must also be efficient in reducing hazard exposure to achieve results. This is accomplished by focusing first on the low hanging fruit - low-cost, high-impact job improvements. Starting with the simple stuff has two advantages - it keeps the investment side of the equation down, and it encourages grass roots participation, resulting in far more opportunities for improvement than you could find on your own. Surprisingly, there seems to be an almost unlimited number of opportunities for low-cost, high-impact improvement when the entire shop floor is engaged.

Calculating Ergonomics ROI

Return-on-Investment (ROI) is a commonly used calculation for cost justification. Several other calculations may be used in your company, but the inputs are basically the same - how much will the project cost, how much money will be saved, and over what time period will the money savings occur. Some calculations require an interest rate, this is company-specific and can be obtained from people in the finance department. Other popular cost justification calculations include:

- Internal Rate of Return (IRR)
- Net Present Value (NPV)
- Payback Period

Remember, cost justification is based on a simple concept: **the benefit of an improvement should outweigh the cost.** Project costs are usually easy to determine, while financial benefits are complex and require research into a variety of areas. Savings can come from numerous areas of improvement, and Humantech has found that clients achieve significant financial benefits in four main areas:

- Productivity
- Workers' compensation costs
- Quality

Absenteeism

Depending on your company, one or more of these areas might provide the results you need for your ROI equation. A good beginning point is to consider what the current business initiatives are, and use existing measurement systems to capture the benefits.

Doing the Math

To calculate ROI, apply the following formula:

$$\frac{\text{3-year ROI} = (3 \text{ years savings} - \text{initial investment})}{\text{initial investment}}$$

Since savings often continue for many years, it is often necessary to determine a reasonable time frame. Three years can be illustrative, but you should check with your finance department on how they like to see the ROI calculation presented.

Ergonomics ROI is clearly a focus area for ergonomics in industry. It is the natural progression of an emerging field:

- First, we learned to identify ergonomics issues in the workplace
- Then, we learned to assess jobs for ergonomic risk
- More recently, we have begun focusing on solving ergonomics challenges and designing-in good ergonomics

It makes sense that for ergonomics to be successful in business, it must be deployed as a business initiative. In this era, business initiatives must not only make an important impact on measures such as injury rates and workers' compensation costs, but also demonstrate a compelling ROI.

Ergo Success: Honeywell Increases Productivity While Reducing Workers' Compensation Costs

Honeywell's facility in Torrance, California was best known as a high-volume Garrett® Engine Boosting Systems manufacturer. Facing increased volume, safety

performance was well below the targeted plan for the division. While ergonomics-related incidents represented less than half of the overall recordable injuries and illnesses, the expanding production needs created both a potential problem and a unique opportunity. Increased production could lead to extended overtime, increasing employee exposures to Musculoskeletal Disorder (MSD) risks. At the same time, capital became available through a lean manufacturing initiative to improve health and safety and productivity.

The Plan

Honeywell's lean manufacturing manager embarked on an initiative to prioritize the ergonomics challenges throughout the facility and train the plant population in the recognition, evaluation, and control of MSD risks. Engineering and technical staff were trained in solving ergonomics challenges and all operators were trained in ergonomics awareness. At the conclusion of this phase, the high-volume turbocharger assembly cell was targeted for expansion. This cell had been one of the highest ergonomics priorities, and management knew that a fresh approach was needed to assure that the new production area did not replicate the problems associated with the existing one,

With operator involvement at each step, Humantech Ergonomists and Honeywell's team established a design process. The process included brainstorming improvements, evaluating vendor-supplied equipment, and improving setups as the cell came together.

It was estimated that the improved layout was approximately \$300,000 more than the cost of replicating the original work cell. Plant management was eager to see a quantifiable return-on-investment for the increased costs.

Completion of the new work cell represented the culmination of a two-year process to prioritize ergonomic risks throughout the facility, to train operators and engineers in ergonomics, and to put in place a showcase ergonomics project.

The Results

The ergonomic and lean manufacturing design of the turbocharger assembly work cell resulted in substantial reduction of ergonomic risk and improved productivity. Several high-risk tasks were designed out altogether. Given that some parts weigh as much as 75 pounds, a 60% reduction in high-risk lifting tasks was quite significant. Within two years, plant-wide workers' compensation costs were down \$2 million per year.

Productivity increased by 37%, translating to approximately \$100,000 per year in reduced labor costs. With an overall savings of \$2.1 million per year, the \$355,000 plant-wide investment achieved a 1,675% Return-on-investment over the following three years.

About Humantech

For nearly 30 years, global companies have relied on Humantech for workplace improvements. By combining the science of ergonomics and our unique 30-Inch View TM where people, work, and environment intersect-we deliver practical solutions that impact safety, quality, and productivity. At Humantech, we believe people make productivity happen. For additional information related to successful ergonomics programs, visit Humantech's web site, www.humantech.com or call 734-663-6707.

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