



Case Study:

Safety Technology Pilot in an Industrial Setting

What's the Risk?

In many large plant operations, it can be difficult to secure adequate resources to assess jobs for ergonomic risks efficiently. Individuals conducting assessments may not be properly trained, and the time and effort it takes to observe and analyze individual jobs and tasks can be extremely high. Due to these issues, organizations often operate with an unclear idea of which jobs or job tasks may be most hazardous, which can lead to more injuries and more workers being put in potentially harmful situations. To aid in this issue, wearable sensor technology that can conduct such hazard assessments is becoming more common and more advanced.

Explanation of LifeBooster Technology

LifeBooster is a wearable sensor technology that uses six motion sensors attached to the back and upper limbs via straps, clips or special-made shirt pockets. The sensors track the motion of the body parts they are attached to, as well as heat and vibration exposure. Data are then uploaded from the sensor to an online platform where it is processed using LifeBooster's Senz system. In that system, the motion data can be processed in different ways to categorize the information per a client's needs (i.e., specific bucketing of ranges of motion).

Goals of Technology Use at Cargill

There were three key areas Cargill was looking to improve with their ergonomics program when preparing to implement the wearable technology:

- Competency
- Accuracy
- Sustainability

Competency for Cargill meant technology that allowed people at their facilities to gather ergonomics data without requiring a significant amount of training. While Cargill recognizes that interpretation of data may require higher levels of competency, the effort to gather and process data could be significantly reduced if the data collection process was accessible to more people, which is especially important for more remote locations with limited environment, health and safety (EHS) resources.

Accuracy focused on the idea that technology can help eliminate variations in data based on observers and their level of training. All data could be processed with an identical logic, allowing for comparison between jobs, workers and even across facilities with similar work.

Sustainability focused on the issue that the ergonomics program at Cargill was often affected by the continuity of the team, and turnover in key roles required regular competency development of newly hired staff. Technology reduces the effect of these changes and helps ensure that data collected over time are consistent. *The overarching goal of implementing this technology at Cargill was to measure the motions for all jobs/tasks within a facility to understand the exposure and potential risks.*

Before the implementation of LifeBooster's technology at Cargill, EHS and musculoskeletal disorder (MSD) prevention work required the collection of individual videos for all job positions to assess the postures and motion frequencies of workers. This was a very time-consuming effort and posed a big challenge to novice assessors.

Application of the LifeBooster Technology at Cargill

The technology was piloted during 10 months from April 2022 to March 2023 in a total of 23 Cargill meat-processing plants. Each plant was assigned a two to eight-week time period in which to utilize the technology, and any preparations were made in the four to six weeks before that assigned time. Enough sensors were provided for four plants to work concurrently. Each plant received two sets of sensors, specially made shirts with pockets for the sensors (four shirts per size for a total of 24 shirts) and a Wi-Fi hotspot. After a plant's test period was complete, the technology and associated equipment were shipped to the next location.

Part of the preparations prior to the pilot period included in-person training, which was conducted in a single session for multiple, geographically grouped plants when possible. A corporate team managed the logistics of technology receiving, shipping and training, and a LifeBooster Customer Success representative handled any questions or issues with the technology.

Impacts

The use of the technology had several key impacts. First, data that shows continuous exposure versus snapshots of exposure has a high potential to improve the understanding of risks in the plant and how to respond to those risks. Data are currently being analyzed, and more will be uncovered about the impacts the solution has on MSDs later in the year.

Regarding current impacts, over the testing period, roughly 2,350 jobs were assessed with the LifeBooster technology. During this time, Cargill reduced their data collection time by ~83%, resulting in ~1,400 hours saved. The full ROI calculation may take two or more years as projects are developed and implemented. However, Cargill notes for a smaller organization, the timeline to move through this process may be quicker as an individual plant can collect data and move on to projects and risk reduction more quickly.

Lessons Learned

A key takeaway learned was that when using wearable sensor technology, an organization can collect a significant amount of data in a short time, thus greatly improving efficiency.

While such multi-sensor wearable technology can be a huge advantage for an organization, some important preparation work must be done before implementation can take place. In Cargill's experience, logistical factors needed to be accounted for, such as laundering. For example, as the LifeBooster sensors were incorporated into specialized attire, laundering had to be coordinated to ensure an appropriate range of shirt sizes was available at all times.

Additionally, when implementing such technology, an organization's IT team needs to be aware of this implementation to ensure network connections are arranged, and data are properly managed and stored. Also, conversations need to occur before implementation with employees regarding:

- Employee privacy
- Collection and use of data
- Purpose of using the technology



Cargill is a privately held American global food corporation with the purpose of nourishing the world in a safe, responsible and sustainable way. Cargill connects farmers with markets, customers with ingredients, and people and animals with the food they need to thrive. Cargill operates in 70 countries and has 155,000 employees and more than 155 years of experience.



LifeBooster is innovating wearable technology, smart garments, data science and business methods to optimize risk reduction in the workplace.

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