Getting ergonomics to work for you

The term ‘ergonomics’ (or human factors) is becoming more familiar, together with how it is used in a particular working environment. For example, meeting the Display Screen Equipment Regulations so that those working with computers have everything set up to reduce the likelihood of them developing a work-related injury. As well as protecting people’s health, ergonomics seeks to optimise people’s performance. So it could apply to how people carry out tasks and interact with colleagues to reduce stress, increase communication and improve how they work.

The expertise, tools and methods used to achieve these goals can be applied to practically all workplaces. Ergonomists who specialise in manual handling will not only know about the relevant regulations, be able to carry out risk assessments and task analysis, but will also look at all the factors that could impact on how someone is carrying out a particular task. The environment people work in, the equipment they use, their level of training, how they interact with their managers and the safety culture of the organisation are all things that might need to be considered.

The IEHF maintains a list of accredited consultancies whose specialists have demonstrated professional skills across varied industrial and service sectors and can provide competent advice. Visit www.ergonomics.org.uk/find-an-accredited-consultancy for more information.

Case study 1: Optimising working environments

System Concepts has over 30 years’ experience in helping clients optimise working environments to improve staff safety, wellbeing and productivity. Whether it’s helping the UK’s largest manufacturer of road sweepers to get to grips with manual handling or working with Cadbury to optimise production line efficiency and safety, their goal-oriented focus delivers tangible results.

System Concepts train Johnston Sweepers’ manufacturing and maintenance staff in safe manual handling techniques. They also train key staff in how to assess manual handling, ensuring they have sufficient competent staff on site to recognise risks and take appropriate action. Johnston Sweepers employ over 500 staff in manufacturing and servicing sites in the UK. Because their work involves complex and demanding manual handling, they had a high incidence of handling injuries they were keen to reduce.

Manufacturing staff use a variety of complex lifting equipment, most of which is highly specialised. System Concepts spends time on site to understand the range of manual handling carried out, collecting evidence of good and poor practice, then use this data to customise their workshops for specific operators. Each workshop focuses on practical techniques to reduce the risk of injury, encouraging employees to participate and contribute their ideas and discuss areas they feel are high risk.
Cadbury have been implementing a number of changes to their production and warehousing operations. To help smooth the changes, System Concepts provided Cadbury’s occupational health team with expert ergonomics advice in a range of areas, including packing line automation; task design, layout and equipment in laboratories and warehouses; helping employees with health problems return to work; training staff in ergonomics principles and noise control.

System Concepts’ consultative style promotes engagement and co-operation on the shop floor, which means that they get the best from staff at all levels and make it easier to implement changes. Their reports have an executive summary, prioritised, practical and credible recommendations and useful, clearly illustrated content.

Case study 2: Reducing musculoskeletal risks in distribution

The Institute for Occupational Ergonomics worked with a major distribution company to evaluate potential manual handling risk factors and propose solutions to reduce the risk of injury and ill health to their warehouse operatives. In particular, the organisation had recognised that the use of heavily loaded, tall roll cages to move items around the warehouse and vehicle loading bay could place workers at risk of musculoskeletal injury.

A systems approach was used to guide the assessment, beginning with gaining a detailed understanding of the people involved, the equipment and machines they used, the workspace, and the physical environment including lighting, noise, climate and dust. Job design and organisation was considered next, together with influences such as legal, financial, technical and social constraints. The methods used included observations at multiple work sites and during different shifts, interviews with management and supervisors and focus groups with operatives.

A number of risk factors were identified including pushing and pulling tall roll cages, lifting goods manually from pallets that were often overstocked by suppliers and lifting heavy goods from the bottom of roll cages and from low level pallets.

Immediate risk reduction could be achieved by the use of smaller roll cages which could not be overloaded, the introduction of automatic lifting tables for pallets to reduce the need for low level lifting, and liaison with suppliers to avoid overstocked pallets. Medium term recommendations included increased training for staff, job rotation and consideration of the use of small electric vehicles for moving roll cages. Longer term recommendations included redesigning parts of the warehouse to reduce the need for manual handing and to carry out feasibility studies for more advanced processing equipment. Advice was also given on participatory ergonomics, inviting workers to be involved in the redesign of equipment and working processes.

Case study 3: Dealing safely with waste collections

Adept Ergonomics is working with a Local Authority to help them reduce their accidents and ill-health incidence related to manual lifting and handling of household and trade refuse. The majority of the waste collections are done manually, without wheeled bins or bin lifts fitted to vehicles. Manual collections have inherent risks of manual lifting and handling injuries such as backstrain, being cut by sharp objects in the refuse, and contact with toxic or dangerous waste.

Adept Ergonomics conducted a study which involved looking at the types of waste that were being collected. This included general household waste and recyclable waste in bags, garden waste in biodegradable bags, 1100 litre multiple occupancy bins unloaded manually using drop fronts, trade waste, and manual unloading of 240 litre bins.
The ergonomist involved, accompanied by the waste manager, followed a number of the rounds in both rural and urban areas. Video data was collected for off-site analysis and bags were weighed and measured, and working hand heights of the operators were measured.

Data analysis showed, unsurprisingly, that there was some variation in posture between different refuse operatives affected by their height, technique and experience. The operatives made the tasks look relatively easy as they had adapted their techniques to allow them to lift and handle the sacks as easily as possible. However what may seem easy to them is not always the best method ergonomically and this was one of the key findings.

Operatives regularly bent their backs to lift sacks up from floor level, this seemed the technique that required the least amount of effort. It has been widely researched and documented that the more the spine deviates from its natural ‘S’ shape to a ‘C’ shape, the more strain and force is exerted on the discs within the spine. To further exacerbate this the discs do not have any pain sensing nerves which means little discomfort is felt by bending the back in this way.

Engineering and automation controls would help to eliminate the risks but were not practical in this case. Adept Ergonomics worked with the Local Authority to ensure that operatives had job-specific manual lifting and handling training that reduced the risk of injury for each task. Active operator involvement was also encouraged to ensure that operators value their health and well-being and contribute to the organisation’s health and safety targets.

Case study 4: Developing behavioural safety

All responsible organisations want to ensure the safety of their workforce. To achieve this, many of them focus on improving the quality of safety awareness, recognising that the creation of a positive culture leading to excellent safety performance requires understanding and commitment throughout the workforce.

Greenstreet Berman has developed a suite of programmes focused on raising safety awareness and developing skills amongst the whole workforce. This includes board members, directors, leaders, managers, process workers, corporate centre/office-based staff and contractors, to help them create a positive, leading health and safety culture.

The workforce needs to share the same set of values and, importantly, to understand how their actions and decisions can create or manage risk within their own operational context, and also affect risks elsewhere in the business. For example, finance department staff can create health and safety risks within their own department but can also inadvertently influence the quality and availability of safety systems through their procurement decisions.

The programmes allow participants to explore the hazards and risks facing both their own departments and the organisation, and to examine how their behaviours can create and export risk to other parts of the organisation. Staff can identify positive behaviours they wish to exhibit and promote, as well as negative behaviours they want to challenge. This is often then turned into a safety ‘Charter’ or ‘Agreement’ that staff sign up to.

The approach enables the workforce to take ownership of safety within the context of their activities, and to become empowered to address existing and emerging issues. It also fosters a process that is sustainable over time. It therefore ensures engagement, not only with behavioural and attitudinal issues, but also encourages focus on issues around process, procedures and equipment.
The programmes have been developed and delivered to major blue chip companies in the power generation, utilities, healthcare and construction sectors and are well-received by both the participants and the organisations, leading to a significant change in behaviours.

The approach creates a greater sense of cohesion and shared goals within the organisation, and maintains a focus on the contribution to safety from all staff, and in all ways, thereby adopting an ergonomics approach to safety performance enhancement.

**Case study 5: Reducing handling risks in an engineering company**

*Tapley Ergonomics* works with companies to help them identify and assess musculoskeletal risks in the workplace and to plan and control those risks to help prevent injury and ill health. They work with a wide range of clients across all industries including health and social care. In one instance the client was a specialist engineering and fabrication company employing over 50 staff who were using a variety of machines and equipment to create precision engineered pieces for the oil and gas industry, where quality is key.

There had been an increase in complaints of wrist, shoulder and low back aches and pains with some cases of sickness absence. Managers were keen to identify what the problems were, to resolve the issues and, if possible, to improve productivity.

Tapley Ergonomics carried out an audit and task analysis of the manufacturing processes using a variety of validated assessment tools, talking to staff and managers and watching the engineering processes. Tasks included lifting and handling components up and down from the floor, handling with arms at full stretch away from the back, handling above shoulder height and twisting to reach components. All these movements expose staff to high levels of musculoskeletal risk. Staff were carrying out multiple handling of components which was slowing the production process down.

Ergonomics recommendations were made to allow the company to make changes that would fit the staff rather than the staff having to adopt poor working postures. The main recommendations were simple and, in some cases, cost neutral and included:

- Providing work surfaces to eliminate the need to handle up and down from the floor
- Moving machinery to allow easier component loading and reducing the need to reach and twist
- Advising on streamlining the process to eliminate high levels of double handling which also speeded up production

Benefits to the company included reduction in sickness absence, increased throughput of components and risk factors demonstrably reduced from high to lower level.