QITA MUTUAL CLUB
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Human Element Issues QITAPI-HEI-10-2019
(Ergonomics & Human Factors)

►Introduction:

The following notes can help designers & decision makers in the process of initial set-ups as well as those working in an environment which might have some ergonomics problems to have a better understanding & possible workmanship solutions.

Ergonomics is a science concerned with the 'fit' between people and their work. It puts people first, taking account of their capabilities and limitations. Ergonomics aims to make sure that tasks, equipment, information and the environment fit each worker.

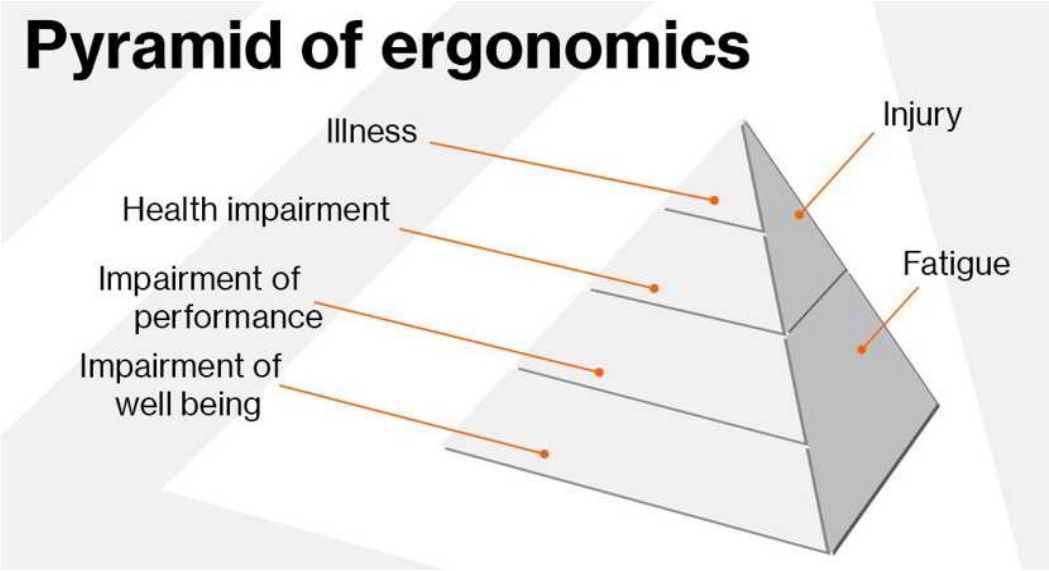
To assess the fit between a person and their work, you have to consider a range of factors, including:

1-The job/task being done:

- The demands on the worker (activities, workload, work pacing, shift-work and fatigue).
- The equipment used (its design in terms of size, shape, controls, displays, and how appropriate it is for the task).
- The information used (how it is presented, accessed, and changed).
- The physical environment (temperature, humidity, lighting, noise, vibration).

2-The individual's physical and psychological characteristics:

- Body size and shape.
- Fitness and strength.
- Posture.
- The senses, especially vision, hearing and touch.
- Mental abilities.
- Personality.
- Knowledge.
- Training.
- Experience.



3-The organisation and social environment:

- Teamwork and team structure.
- Supervision and leadership.
- Supportive management.
- Communications.
- Resources.

You will find a range of physical and psychological abilities in your workforce which you may need to take into account in designing the plant and equipment they use, and the tasks they perform.
By assessing people's abilities and limitations, their jobs, equipment and working environment and the interaction between them, it is possible to design safe, effective and productive work systems.

4-How can ergonomics and human factors improve health and safety?

a) Applying ergonomics to the workplace can:

- ✓ Reduce the potential for accidents;
- ✓ Reduce the potential for injury and ill health;
- ✓ Improve performance and productivity.

b) Taking account of ergonomics and human factors can reduce the likelihood of an accident. For example, in the design of control panels, consider:

- The location of switches and buttons –
- Switches that could be accidentally knocked on or off might start the wrong sequence of events that could lead to an accident;
- Expectations of signals and controls – most people interpret green to indicate a safe condition. If a green light is used to indicate a 'warning or dangerous state' it may be ignored or overlooked;
- Information overload – if a worker is given too much information they may become confused, make mistakes, or panic. In hazardous industries, incorrect decisions or mistaken actions have had catastrophic results.

c) Ergonomics can also reduce the potential for ill health at work, such as aches, pains and damage to the wrists, shoulders and back, noise-induced hearing loss and work-related asthma. Consider the layout of controls and equipment – they should be positioned in relation to how they are used. Place those used most often where they are easy to reach without the need to stoop, stretch or hunch. Making sure protective measures such as extraction hoods or respirators are easy and comfortable to use means they are more likely to be effective at reducing exposure to hazardous substances.

If you don't follow ergonomics principles, there may be serious consequences for people and whole organisations. Many well-known accidents might have been prevented if ergonomics and human factors had been considered in designing people's jobs and the systems they worked in.

5-What kind of workplace problems can ergonomics and human factors solve?

Ergonomics is typically known for solving physical problems. For example, ensuring that emergency stop buttons are positioned so that people can reach them readily when they need to. But ergonomics also deals with psychological and social aspects of the person and their work. For example, a workload that is too high or too low, unclear tasks, time pressures, inadequate training, and poor support from managers can all have negative effects on people and the work they do.

The following examples highlight some 'typical' ergonomic problems found in the workplace:

Design of tasks:

- Work demands are too high or too low.
- The employee has little say in how they organise their work.
- Badly designed machinery guards (awkward to use or requiring additional effort) slow down the work.
- Conflicting demands, e.g. high productivity and quality.
- These problems can lead to employees failing to follow procedures or removing guards, causing accidents, injury and ill health.

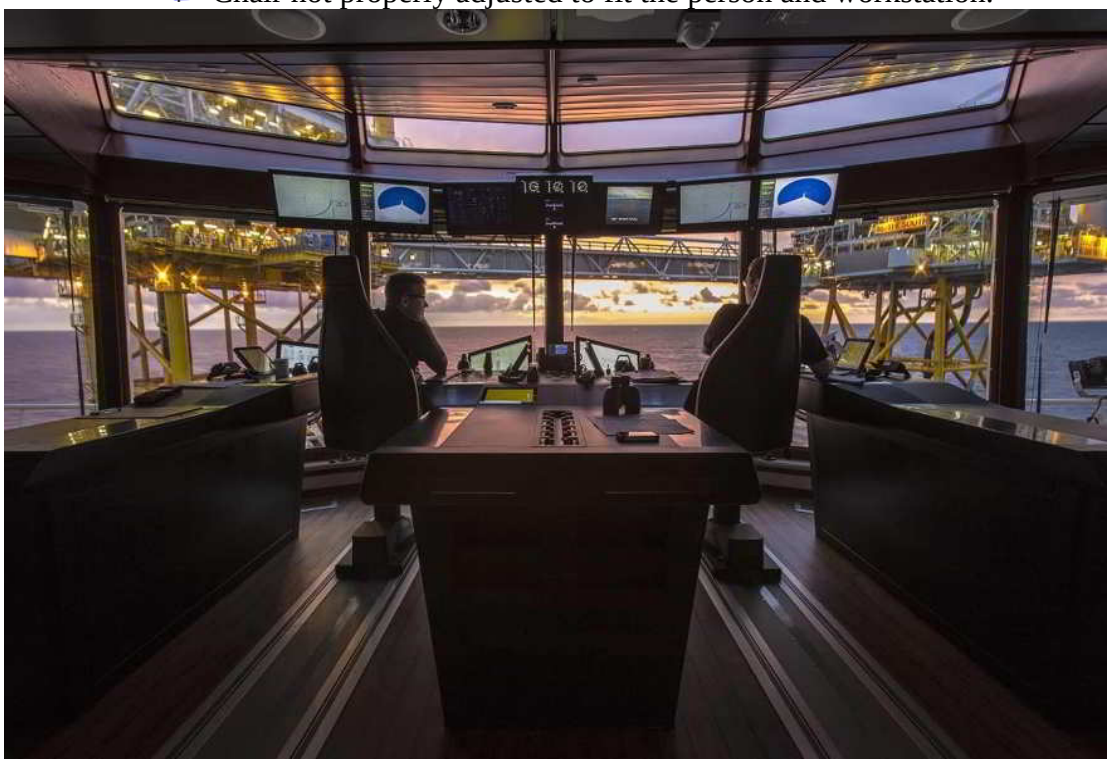
Manual handling:

- The load is too heavy and/or bulky, placing unreasonable demands on the person.
- The load has to be lifted from the floor and/or above the shoulders.
- The job involves frequent repetitive lifting.
- The job requires awkward postures, such as bending or twisting.
- The load can't be gripped properly.
- The job is performed on uneven, wet, or sloping floor surfaces.
- The job is performed under time pressures and doesn't include enough rest breaks.

These problems may lead to physical injuries, such as low back pain or injury to arms, hands, or fingers. They may also contribute to the risk of slips, trips, and falls.

Workstation layout:

- Items that are used frequently are out of convenient reach.
- Inadequate space under work surface for legs.
- Work surface height inappropriate for the tasks causing awkward and uncomfortable postures.
- Lighting inadequate causing eyestrain when inspecting detail on work items.
- Chair not properly adjusted to fit the person and workstation.



Managing the working day:

- Not enough recovery time between shifts.
- Poor scheduling of shifts.
- Juggling shifts with domestic/other responsibilities.
- Employees working excessive overtime.

6-How can I check if there are ergonomics problems?

Checking for human factors problems is part of your normal risk assessment process. The first step in a risk assessment is to identify the hazards. This can be done by talking to employees and seeking their views, walking around your workplace to see if you can spot any hazards, and reviewing any accidents or reports of ill health you have had in the past.

You are legally required to consult all your employees, in good time, on health and safety matters. Consultation involves employers not only giving information to employees but also listening to them and taking account of what they say before making health and safety decisions. Employees have important knowledge of the work they do, problems they have, and their impact on health, safety, and performance. While talking to them, you could also ask them some specific questions about their work.

7-Hazard spotting:

While you walk around your workplace, look for signs of poor or inadequate equipment design such as:

- ❖ Improvised tools;
- ❖ Handwritten reminders, or handwritten labels on machinery controls;
- ❖ Plasters on workers' fingers or 'home-made' protective pads made of tissue or foam.

8-Review:

- ✓ Review information you may already have about accidents and ill health which may result from human factors problems:
- ✓ Look at the circumstances that lead to frequent errors or incidents. Try to identify the root causes of people's mistakes. Use accident reports to identify details of incidents and their possible causes.
- ✓ Record and look at sickness absence and staff turnover levels. High numbers may be because of the problems listed earlier and/or dissatisfaction at work.

9-What can I do if I think I have identified an ergonomics problem?

a. Talk to employees and get them to suggest ideas and discuss possible solutions. Involve employees from the start of the process – this will help them to adopt changes.
b. Look for likely causes and consider possible solutions. A minor alteration may be all that is needed to make a task easier and safer to perform.

For example:

- *Arrange items stored on shelving so those used most frequently and those that are the heaviest are between waist and shoulder height;*
- *Raise platforms to help operators reach badly located controls (or alternatively relocate the controls);*
- *Remove obstacles from under desks so there is enough leg room;*
- *Provide height-adjustable chairs, so individual operators can work at their preferred work height;*
- *Change shift work patterns;*
- *Introduce job rotation between different tasks to reduce physical and mental fatigue.*
- *Always make sure any alterations are properly evaluated by the people doing the job. Be careful that a change introduced to solve one problem doesn't create difficulties somewhere else.*

You should be able to identify straightforward, inexpensive changes yourself. But you may need to ask a qualified ergonomist if you can't find a straightforward solution or if a problem is complex.

Adopting an ergonomics and human factors approach can save money in the long term by avoiding costly accidents, reducing injuries, reducing sickness absence, and improving quality and productivity.