

TE 4225

ERGONOMICS

(What are the ergonomic risk factor describe them)

What?

- Ergonomics is a science, art and technology that seek to improve mental and physical well being by optimizing the function of machine-man-environment system.
- It is the study of anatomical, physiological and psychological aspects of human in working condition for optimizing the efficiency, health, safety and comfort of people at work, at home and at play.
- Ergonomics aim to make sure that tasks, equipment, information and the environment suit each worker.

To assess fit, ergonomics have to consider the following aspects-

- ✓ The job being done and the demand on the worker.
- ✓ The equipment used (Size, shape, and how appropriate it is for the task)
- ✓ The information used (How presented, accessed, and changed)
- ✓ Human work place and layout of workstations.
- ✓ The physical environment and comfort of worker (Temperature, humidity, lighting, noise, vibration)
- ✓ The social environment (Teamwork and supportive management)
- ✓ Physical aspects of a person (Body size and shape, fitness and strength, posture, the senses especially vision-hearing and touch, and the stresses and strains on muscles, joints and nerves)
- ✓ The psychological aspects of a person (mental abilities, personality, knowledge, and experience)

Importance and benefits of

(In sewing floor) **ergonomics** (Previous)

- ✓ Increased productivity
- ✓ Increased work quality by good working environment
- ✓ Reduced migration of worker
- ✓ Reduced absenteeism
- ✓ Increased morale of worker
- ✓ Reduced potential for accidents
- ✓ Reduced potential for injury and ill health at work
- ✓ Improved performance and efficiency
- ✓ Increased usefulness of assets
- ✓ Improved work methods by motion study
- ✓ Avoidance of hazards.

Objectives

- To enhance desirable human values like health, safety, ease of use etc.
- To improve the efficiency of operations (Strength, speed, visual acuity, psychological stresses such as fatigue, speed of decision making and demands on memory and perception)
- To reduce worker compensation costs and provide more reliable workforce.
- To utilize the skills of many disciplines, including engineering, psychology, medical, safety, management and the employees or associates.
- To classify difficult tasks and solve it by diversified ways.
- To enhance performance and productivity.
- To prevent fatigue and injury.
- To change the work process, environment and work management as necessary.
- To quantify high risk or problem areas.

Elements of ergonomics

(Previous)

A) people

B) Equipment

C) Workplace environment

People

- People vary from each other in body structure and function. These variations are potential problems that ergonomics aim to be taken care of. Factors that causes variation of performance among people are-

Gender	Fatigue	Race
Fitness	Health status	Disability
Personal idiosyncrasies	Health history	Training
Body dimension	Aerobic capacity	Experience
Body dimension ratio	Age	Strength
Body shape	Personal Preference	Intelligence
Visual status	Motivation	Attitude

Equipment

- The result of poor performance and injury is often the outcome of mismatch or maladjustment between the person and the machine/ equipment they use. For example, incorrect working height is one of the most common workplace design errors as because people come in different heights. Adjustability is essential to overcome the physical difference where different people use the same workstation.

Workplace environment

- Each workstation is a workplace affected by workplace environment that includes lighting, ventilation and noise level. Allocation of people to workstation is often dependent on design of the jobs and organizational structure.

Factors that play role in ergonomics

1. Body posture and movement: Standing, sitting, lifting, pulling, pushing etc.
2. Environmental factors: Illumination, noise, vibration, climate, chemical substances etc.
3. Information and operation: Information gained visually or through other senses, controls and relation between displays and control.
4. Tasks and jobs: Appropriate tasks and interesting jobs.

A Road to a comprehensive Ergonomics Program

- ✓ Training of supervisors and managers.
- ✓ Awareness training for employees.
- ✓ Job analyses and implementation of controls.
- ✓ Worker involvement and participation.
- ✓ Medical management.
- ✓ Provide anti-fatigue matting for standing workers.
- ✓ Improved lighting.
- ✓ Require rest periods.
- ✓ Job rotations.
- ✓ Automated materials handling.
- ✓ Work to the queues of the most productive workers and less to slower workers or beginners.

Application of Ergonomics in workplace

- The correct use of human body ace is correct ergonomics.
- Understanding of ergonomics can improve daily routine.
- Workplace should have proactive approach towards ergonomics.

Physical layout of work-place and workplace design

- Work pattern: How we work differently?
- Working spaces: Patterns of space we use.
- Physical layout elements: Aisles, pillars and so on make a difference.
- Psychological principles: Basic human needs are important.
- Workplace design: Principles for creating good work place.
- Workstation design: Designing the desk where people sit.
- Workplace for teams: Building places where people can work together.
- Beauty of workplace: For visitors and those who works.