



## **ERGONOMICS IN THE WELDING ENVIRONMENT**

### **INTRODUCTION**

The welding environment introduces many challenges to the field of ergonomics, many of which are now just being understood, not only by the manufacturing/processing sector, but by the medical profession as well.

### **DEFINITION**

Ergonomics, also called human factors engineering, involves designing the workplace to fit the needs of the workers, rather than trying to make workers adjust to the workplace. When a workplace is designed properly, the worker performing the task feels comfortable with the job both physically and psychologically. Quality and production increase, and all parties benefit from the improved conditions.

### **PROBLEMS RESULTING FROM POOR ERGONOMICS**

- Repetitive Motion Disorder (RMD).
- Cumulative Trauma Injury (CTI).
- Lower productivity.
- Lower quality.
- Worker dissatisfaction.

### **POSSIBLE SOLUTIONS TO ERGONOMIC PROBLEMS**

- Recognize that both RMD and CTI are often felt to be a type of short term weakness or fatigue, when actually they are the start of potentially larger injuries.
- Address all initial complaints in a timely manner.

- Interact with the worker and discuss possible solutions to give the employee ownership of any new plans and to gain acceptance for any redesign solutions.
- Redesign the workstation in conjunction with the employee so he feels part of the process, uses the new design, and helps develop other ideas for future improvements.

## **WORKSTATION DESIGN FACTORS**

Some of the many factors that require consideration when analyzing and designing the welding environment include the following:

- The physical ability of the worker (history).
- The weight of the gun.
- The design of tools.
- The position of the work.
- The body mechanics of the individual welding operation.
- The type of protective equipment the welder is using.
- The work space (size, lighting, temperature, noise, vibration, etc.)
- Physical requirements of the job (lifting, turning, reaching).
- Mental requirements of the job (motivation, alertness, concentration).

## **INFORMATION SOURCES**

McKormick and Sanders. *Human Factors in Engineering and Design*. New York: McGraw-Hill Book Co., 1982.

AIHA Report, *Ergonomic System Analysis Checklist*, published by the American Industrial Hygiene Association, 475 Wolf Ledges Parkway, Akron, OH 44311.

*Ergonomics Program Management Guidelines*, OSHA 1990. Washington, DC: U.S. Government Printing Office