

Focus on IFA's work

Edition 2/2013

617.0-IFA:617.81

Evaluation of an ergonomically designed ironing workstation

Problem

In response to an initiative by the German Social Accident Insurance Institution for the energy, textile, electrical and media products sectors, together with the Institute of Work and Health of the German Social Accident Insurance (IAG) and a manufacturer of ironing stations, an ergonomic ironing workstation was produced. The facilities for ergonomic adjustment were reviewed in advance by means of human modelling software. The ironing station was to be evaluated by experienced ironers during realistic tasks in order to ascertain the effectiveness and efficiency of the ergonomic design measures.

Activities

Seven experienced ironers took part in the comparative analysis in the IFA's ergonomics laboratory. They performed standardized ironing tasks on shirts at both the ergonomic and a conventional workplace. Body postures and movements of the head, spine, and upper and lower extremities were quantified by means of the CUELA measurement system¹ and evaluated by means of various ergonomic and occupational medical methods. The acceptance of the workplaces among the test subjects was determined by means of questionnaires.



Ironer fitted with the CUELA measurement system

For assessment of the efficiency, the quality of the ironing result was evaluated by means of a method developed at the University of Bonn in the faculty of agricultural engineering, household technology section for standardized assessment of the folds and creases. The ironing time per shirt was also evaluated on the two different workplaces.

Results and Application

The redesigned ironing workplace was found in the main to have followed good ergonomic principles. A simple technical facility for adjusting the height of the work surface, and automatic adjustment when the sleeve board is swivelled in, proved to be advantageous. The very good illumination of the ergonomic ironing station was also found to have a positive effect.

¹ CUELA system of computer-assisted measurement and long-term analysis of musculoskeletal workloads

However, the available adjustment functions were useful only to users in the upper percentile range of the body-height distribution. By contrast, with a mean height of 1.60 m, the test subjects represented the lower percentile range of the body-height distribution. For these users, the height-adjustment function of the ergonomic ironing station was found to have limitations. As a result, no significant improvements in body postures and movements were measured for this group of persons. It was however possible to formulate specific proposals for the manufacturer of this ironing station for its improvement.

Evaluation of the quality of the ironing results and of the ironing times per shirt achieved with the ergonomic ironing station revealed only minor improvements compared to the conventional station. The substantially higher purchase costs of the ergonomic ironing station are therefore a major drawback. The ergonomic station did however meet with strong acceptance among the ironers.

The results of the project are to serve as a basis for recommendations for the design of ironing stations.

Area of Application

Prevention services of the German Social Accident Insurance Institutions

Additional Information

- Results of evaluation of an ergonomically designed ironing station. Bachelor thesis, degree in medical technology and sports medical technology, Koblenz University of Applied Sciences, RheinAhrCampus Remagen, presented by Miriam Büllesbach, Sankt Augustin, July 2008

Expert Assistance

IFA, Division 4: Ergonomics – Physical Environmental Factors

Literature Requests

IFA, Zentralbereich