

Ergonomic design of machinery and workplaces in the food industry

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Abstract

The food industry is one of the most important economic sectors in the EU. Many representative tasks in food warehouses, supermarkets, slaughterhouses or food production chains are inadequate with respect to ergonomic working conditions: a high repetitiveness, awkward postures, handling of loads or task organization. The Instituto de Biomecánica de Valencia (IBV) has carried out a study of the ergonomic working conditions in representative workplaces of the food industry, identifying the main workplace ergonomic risk factors and has proposed recommendations for the design of tasks and workplaces. Ergo/IBV method was applied in this study; Ergo/IBV is a software tool developed by IBV to analyze ergonomic job risks in manual materials handling, repetitive jobs, tasks with inadequate postures, office workplaces and tasks carried out by pregnant workers. A more detailed analysis was carried out in workplaces with higher ergonomic risks, for instance, '*selection and packing of fruit*', two of the most representative tasks in food warehouses in Spain. As a result of this study, detailed design recommendations were provided and dissemination of results to machine manufacturers, food enterprises and end users all over Spain was carried out.

Introduction

Physical workload originates more than 31% of total accidents at work in Spain, constituting the first cause of these accidents, and 79.3 % of the workers complain of musculoskeletal pain at their workplace (INSHT 2003). Food industry presents numerous activities with elevated physical workload due to manual materials handling, inadequate work postures and/or high repetitiveness; some typical examples of these activities can be found in food warehouses, supermarkets, or industrial slaughterhouses for storing and distribution of fruits, vegetables, meat, or dairy products.

The IBV has carried out a two-year study of the ergonomic working conditions in representative workplaces of the food industry. Sixty six different workplaces belonging to Spanish food enterprises were analyzed, identifying the main

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