

High volume high quality printing - A trade in urgent need of the application of ergonomics

Mic L. Porter

University of Northumbria at Newcastle

Three projects have been completed in commercial printing company and they have yielded many areas of concern to an ergonomist. The companies concerned produced high quality, often specialised, unbound printed paper that was then shipped to the end user.

The presses concerned while capable of sophisticated and high quality printing could not easily be set up, maintained or cleaned. Yet such attention could be required several times during the shift. This often involved working in congested, possibly fume filled spaces, while attempting to apply force or lift and manoeuvre heavy awkward objects such as “blankets”, wiper rollers and printing plates. In the case of Presses it will be self evident that ergonomics must be incorporated into the design but that the capital costs of such items will make such changes very slow to achieve.

Once the paper has been printed the inspection of sheets (perhaps as large as 1000mm x 750mm) for faults may follow. This task has all the problems of classical inspection tasks coupled with the fact that the object is large, awkward and heavy to handle and that the faults looked for might be minute, requiring a magnifier to see!

Following from “Sheet Inspection” “jogging” - a heavy manual task in which air is introduced into stacks of paper which are then precisely aligned - is undertaken and the stack guillotined. The use of rubber bands to hold the stack of product together is common but does lead to musculoskeletal complaints from those undertaking the work. Another inspection task is undertaken at this stage before the products undergo any “finishing” operations and packed for dispatch. Typically this inspection task will require a pile, typically 8cm thick (but perhaps more) and weighing over 1kgf to be held between thumb and fingers, while the other end is “fanned” and colour changes or image movement is looked for. The process may then be repeated a further three times as the other end and the reverse are checked. This task may also be associated with the removal and reapplication of the rubber band.

The stages of the Printing and Finishing Operations will be illustrated together with details of the self reported incidence rates of musculoskeletal discomfort and injury. Examples of solutions and routes to risk reduction will also be outlined but it must be said that, to date, these have largely concerned automation and the removal of the person from the task.