



Loss Control TIPS

Technical Information Paper Series

Innovative Safety and Health SolutionsSM

Quick Changeovers: Reducing Risk and Increasing Productivity

What is a Changeover?

A *changeover* is the process of converting a machine to produce a different part, such as is done with mold and die changes. Modern designs allow changeovers to occur between the time one piece is ejected from the machine and the time the next piece is inserted. This is called *instant changeover*, with no production time lost.

Changeover time is defined as beginning when the *last good piece* of the current run is produced, and ending when the *first good piece of the next run* is produced.

Why Are Quick Changeovers Important?

Three primary concerns are associated with changeovers:

- increased risk of injury
- machine downtime
- non-value-adding labor time

Changeover injury exposures include:

- slips and falls
- back injuries
- cuts
- amputations
- bumps
- foreign bodies in eyes
- sprains and strains to upper extremities

These hazards alone are good reasons to complete changeovers quickly. Loss of machine time and wasted labor make quick changeovers even more compelling. You can reduce changeover times, and reduce the potential for injury at the same time, by using the simple techniques described below.



Stage Materials Needed for the Changeover

First, stage the material needed for the changeover. Make it routine to have all the tools and tooling needed, including lift trucks or other required powered equipment, at the machine at the scheduled changeover time. Some companies have reported up to a 50% reduction in changeover times simply by staging the needed materials and equipment. The cost to implement this step is negligible.

Some organizations find it difficult to schedule changeovers closely. Even so, staging tools and dies which are commonly used, and designating locations for other equipment needed for changeovers, can save considerable time and effort.

Re-Work Last Pieces, Dies, and Molds Quickly

Second, when the last piece prior to the changeover is run, send it, along with the die or mold, to the tool and die shop for rework. The tool maker will closely examine the last part for any defects, then rework the die or mold as needed before placing it “on the rack.” This ensures that damaged dies are not placed on the rack, helping to prevent installation of bad dies or molds. This reduces set-up time, and often saves considerable rework generated by defective tooling.

Use Good Changeover Techniques

Third, use more sophisticated quick changeover techniques, such as base plate mating, quick release clamps, locator pins, die transfer systems, etc., to further reduce changeover times and increase quality. These techniques involve more significant investment in training, development, and equipment.

Analyze Changeovers and Make Improvements

Perhaps the best way to determine which changeover improvements are needed is to videotape the changeover, then analyze why each step is necessary. Identify delays and difficult, time consuming steps, then brainstorm possible solutions.

Don't forget to examine the scheduling process, too. A mid-run interruption to accommodate a rush order forces two additional changeovers, making the rush order very expensive.

Any way you look at it, changeovers are costly. Reducing the time needed for changeovers results in a much more flexible production system, higher profits, and usually a lower injury rate.

For more information, contact your local Hartford agent or your Hartford Loss Control Consultant. Visit The Hartford's Loss Control web site at <http://www.thehartford.com/corporate/losscontrol/>

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