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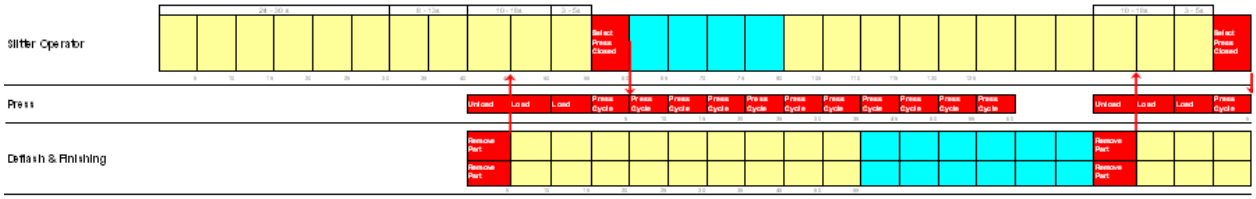
A manufacturer of home building products (windows and doors) has a business unit which makes door skins out of sheet molding compound (generally known as fiberglass). This compound was processed through a chemical batch mixing process, and then pressed into the door skin using hydraulic presses.

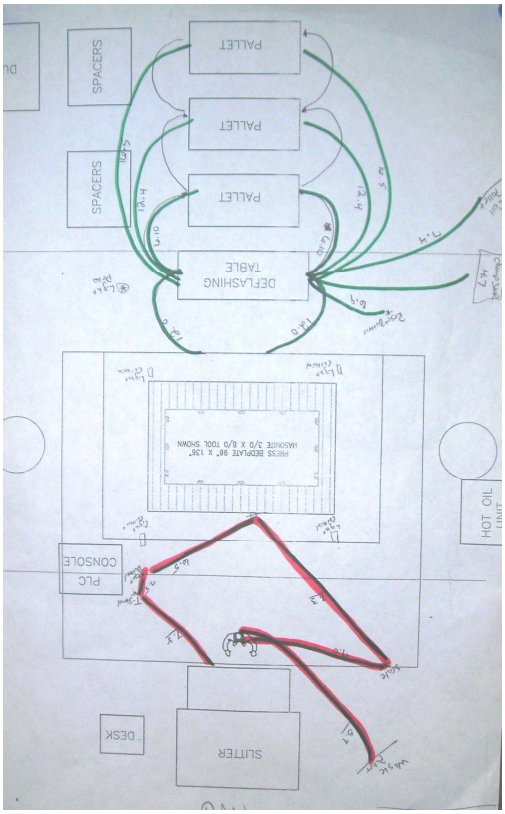
The business unit experienced capacity constraints and inefficiencies in the press operation. A kaizen was planned to improve the press process. During the planning process, time studies where performed to understand the interaction between the operators and the press (open / close) cycle. The areas marked in blue indicate wait-time for the operators during press close. This was important since the objective of the kaizen was to improve process efficiency, and therefore reduce operator wait time.

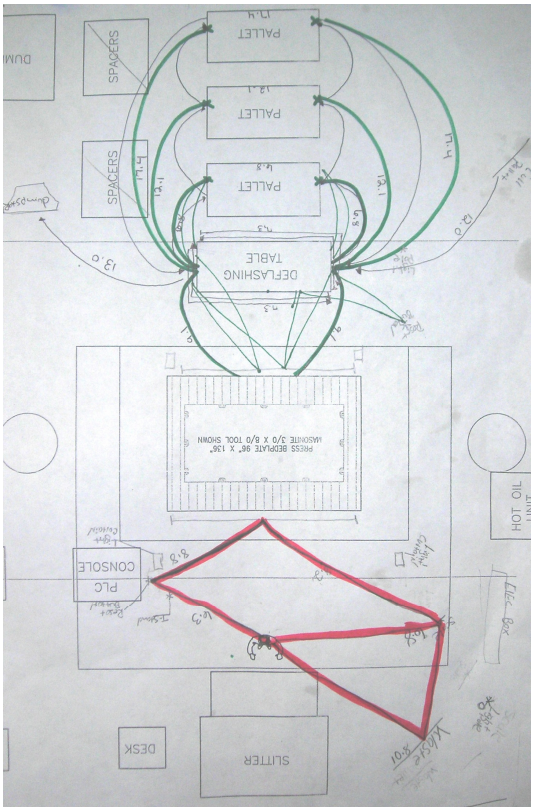


Operator wait time

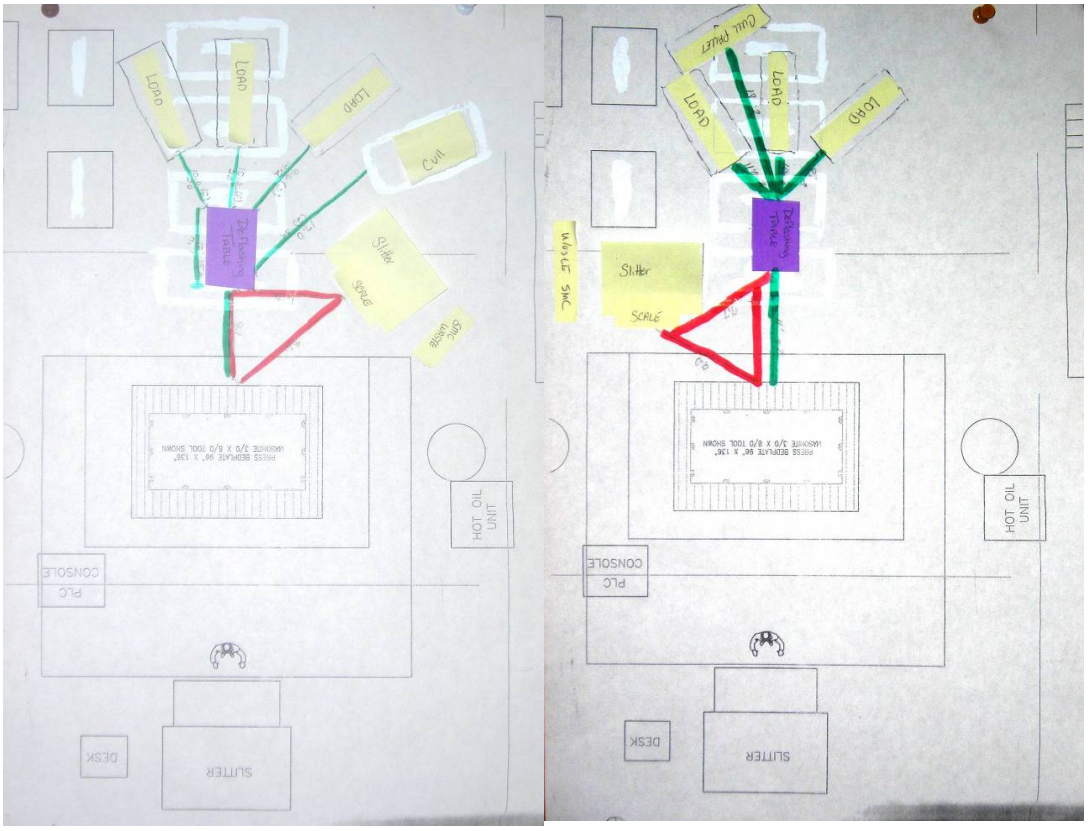
Prior to the kaizen, a preliminary study was performed to estimate a revised process and physical arrangement which would enable two operators (instead of three) to accomplish the same process. This set the stage for the actual kaizen event, where the revised process would be incorporated and validated.

During the Kaizen, spaghetti maps were created as follows:



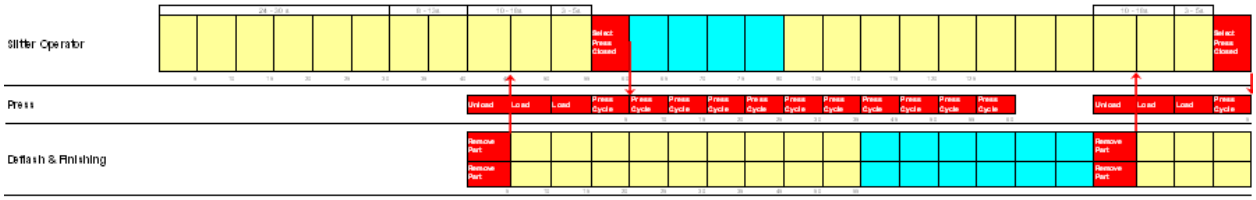


The process was revised in addition to the physical arrangement indicated by the following:

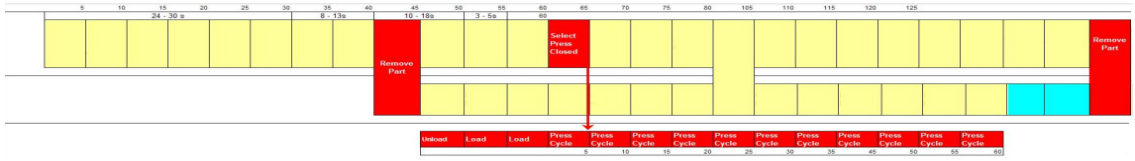


Rather than feeding the sheet molding compound through the press, both operators performed the process on the same side of the press. This served two purposes (1) it cut down on walking distance and (2) it enabled a process that was synchronized with the press cycle time.

Before:



After:



Operator wait time

It can be see that, in addition to using two operators instead of three, the operator wait time was significantly reduced (**from total 80s per cycle total to 15s per cycle or less).** This is significant due to hundreds of press cycles per day.

The redeployment of headcount to a different (constrained) product line avoided an increase in headcount and an estimated yearly savings of **$374,000**.

Mixed Modeling:

An additional source of inefficiency (addressed by the kaizen) was to minimize tooling changes, associated tooling adjustments, and manual labor. Tooling changes were required in order to fabricated different door skin styles (designs).

An analysis was performed to optimize the mix of exterior door skin styles vs. press as follows:

Press #5: Standardized on "Patio" Door Skins (reduced # of styles from 29 to 25)

- Reduced extra shimming (to fit the product to different presses)
- Use same tool to create different products where possible
- Standardizes the work-crew arrangement & process
- Higher bed plate for manual loading (better ergonomics)
- More control over charge placement for patio

Press #6: Standardized on Low Volume Specialty Door Skins (increased # of styles from 17 to 29)

- Higher bed plate for manual loading (better ergonomics)
- More control over charge placement for low volume tools

Press #6: Standardized on High Volume Door Skins Styles (increased # of styles from 17 to 5)

- Focus high-volume on the press with the most "up-time"
- Fewer tool changes

The schedule of product styles to specific presses was revised and achieved an estimated yearly savings of **$101,376**.

Summary:

In one kaizen event, the client saved an estimated **$475,376** per year